

**California Regional Water Quality Control Board
Santa Ana Region**

June 24, 2005

Item: 17

Subject: Public Workshop: Proposed Basin Plan Amendment – Incorporation of Total Maximum Daily Loads for Bacterial Indicators in Middle Santa Ana River Watershed Waterbodies

DISCUSSION

On February 3, 2005, staff of the California Regional Water Quality Control Board, Santa Ana Region (Regional Board) issued a staff report entitled, "Staff Report on Bacterial Indicator Total Maximum Daily Loads in the Middle Santa Ana River Watershed" (TMDL Report). The TMDL Report proposed that the Regional Board consider amendment of the Implementation Plan of the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) to incorporate the proposed TMDLs, which require actions to reduce bacterial indicators in Middle Santa Ana River (MSAR) Watershed waterbodies.

Based on written comments received from the public, Board Staff have revised the proposed TMDLs (Attachment to Tentative Resolution No. R8-2005-0001). The recommended changes are described below. Attachment B contains Board Staff responses to comments received after the February 3, 2005 public workshop. Copies of the written comments are included in Attachment D.

Attachment B includes responses to comments received from Dr. Marylynn Yates, who provided the requisite scientific peer review. It should be noted that Dr. Yates found no significant flaws in the technical approach used to develop the proposed TMDLs (see Comments #75 – 95).

A public hearing to consider the adoption of the proposed TMDLs as a Basin Plan amendment is scheduled for the August 26, 2005 Board meeting.

In summary, the proposed TMDLs include:

- A. Numeric targets based on fecal coliform and *E. coli*
- B. Dry weather and wet weather TMDLs for fecal coliform and *E. coli*, with appropriate compliance schedules
- C. Wasteload Allocations (WLAs) for point source discharges and Load Allocations (LAs) for nonpoint source discharges;
- D. An implementation plan and schedules for compliance with the TMDLs, numeric targets, WLAs, and LAs; and,
- E. A monitoring plan and schedule to assess the effectiveness of the TMDLs.

Based on the comments received on the proposed bacterial indicator TMDLs (as presented on February 3, 2005), Board Staff proposes the following major changes to the TMDLs/Basin Plan Amendment.

1. Incorporation of *Escherichia coliform* (*E. coli*) as an additional bacterial indicator numeric target, and corresponding revisions to the TMDLs, WLAs, and LAs

In the TMDL Report, Board Staff proposed to use the existing Basin Plan fecal coliform REC1 bacterial objectives as the numeric targets for the TMDL. The Basin Plan does not currently specify any other bacterial indicator for recreational beneficial uses. However, USEPA has required the states to evaluate and incorporate more appropriate bacterial indicators, including *E. coli*, as water quality standards based on its Ambient Water Quality Criteria for Bacteria – 1986 (1986 Criteria). In response, the Regional Board is participating in the efforts of the Storm Water Quality Standards Task Force (SWQTF), which is evaluating USEPA's bacterial indicator recommendations, as well as REC1 beneficial use designations. In preparing the TMDL Report, staff was aware that new REC1 objectives based on EPA's criteria would be considered, but believed that it would be prudent to allow the Task Force work to be completed before incorporating targets/TMDLs based on alternative indicators. However, Riverside County Flood Control and Water Conservation District, San Bernardino County Flood Control District, USEPA and the scientific peer reviewer all recommended that alternative or additional bacterial indicators based on EPA's criteria be considered for incorporation in the TMDL (see Attachment B, Comments #2, 6 and 56). It may be noted that the two flood control districts are founding members of the SWQTF. Considering these comments, Board Staff now propose to include *E. coli* as an additional bacterial indicator in these TMDLs. Board Staff propose to use certain indicator densities (for *E. coli*) found in USEPA's 1986 Criteria¹ as bases for the numeric targets, TMDLs, WLAs, and LAs (with an explicit margin of safety, see #2, below). The *E. coli* targets/TMDLs are based on *E. coli* criteria that roughly correspond to the health risk level associated with the existing Basin Plan fecal coliform objectives. Proposed changes to the numeric targets and TMDLs are shown in 1.A. Numeric Targets and Table 5-9x of the proposed Basin Plan amendment (Attachment to Resolution No. R8-2005-0001).

2. Incorporation of an explicit margin of safety in the numeric targets, TMDLs, WLAs, and LAs

In the TMDL Report, Board Staff proposed to use the existing Basin Plan fecal coliform REC1 water quality objectives directly as the numeric targets, TMDLs, WLAs, and LAs, without including an explicit margin of safety. Rather, to meet TMDL requirements, Board Staff proposed to recognize an implicit margin of safety provided by the conservative assumptions used in the derivation of the fecal coliform objectives. Board Staff believed that this approach would account for unquantified factors, including bacterial re-growth, die-off, and dilution.

However, comments received from USEPA, Riverside County Flood Control and Water Conservation District, San Bernardino Flood Control District and Dr. Yates, indicated that these unquantified factors, particularly re-growth of bacteria, are not fully understood and could possibly play major, if not central, roles in bacterial indicator levels in the watershed (see Attachment B, Comments #3, 18, 45, 53, 54, 79, 80 and 81). Consequently, the commenters suggest that these factors should be addressed in the TMDL. Because re-growth in the MSAR Watershed waterbodies is an unknown and has not been evaluated or

¹ Log mean less than 126 organisms/100 mL based on five or more samples per 30-day period, and not more than 10% of the samples exceed 235 organisms/100mL for any 30 day period.

quantified, USEPA's TMDL guidance recommends the use of an explicit margin of safety. Therefore, Board Staff propose to incorporate an explicit 10% margin of safety in the numeric targets, TMDLs, WLAs, and LAs. The resulting changes to the proposed numeric targets, TMDL, WLAs and LAs, as shown in 1.A. Numeric Targets and Table 5-9x of Attachment to Resolution No. R8-2005-0001, are as follows:

Fecal coliform numeric targets, TMDLs, WLAs, and LAs:

Log mean less than 180 organisms/100 mL based on five or more samples per 30 day period, and not more than 10% of the samples exceed 360 organisms/100 mL for any 30-day period.

E. coli numeric targets, TMDLs, WLAs, and LAs (see #1 above):

Log mean less than 113 organisms/100 mL based on five or more samples per 30-day period, and not more than 10% of the samples exceed 212 organisms/100mL for any 30 day period.

3. Revisions to the proposed compliance schedules for the TMDLs and implementation components

- A. The Regional Board received comments from the Riverside County Flood Control and Water Conservation District and the San Bernardino Flood Control District expressing substantial reservations regarding complying with the TMDLs during wet weather conditions in accordance with the year 2020 schedule proposed in the TMDL Report. The Flood Control Districts and also Dr. Yates believe that treating or managing large quantities of rainfall runoff would pose significant logistical, technical, and economic difficulties (see Attachment B, Comments #9, 31, 45, 56 and 82). Board Staff agree that because of challenges associated with treatment of stormwater, and recognizing the efforts of the Storm Water Quality Standards Task Force, it is appropriate to establish separate compliance schedules for dry conditions and wet conditions. Consequently, Board Staff propose a separate compliance TMDL date for dry weather conditions of December 31, 2012, and an extended compliance date of December 31, 2025 for wet weather conditions. These proposed revisions are shown in the Attachment to Resolution No. R8-2005-0001, Table 5-9x.
- B. Based on comments received, staff proposes to modify the compliance date for submittal of the Urban Source Evaluation Plan (Task 4.1) to be consistent with the compliance date for the submittal of the Agriculture Source Evaluation Plan (Task 5.1) (Attachment B, Comment #40). Both the Urban Source Evaluation Plan and the Agriculture Source Evaluation Plan would be due 6 months after the Basin Plan amendment becomes effective. This proposed revision is shown in the Attachment to Resolution No. R8-2005-0001, Table 5-9y and in Task 4.1.
- C. Board Staff initially proposed that based upon results of implementing the proposed Watershed-Wide Monitoring Program (Task 3) and the Urban Source Evaluation Plans (USEP-Task 4.1), the Municipal Storm Water Management Program, the Drainage Area Management Plan, and Water Quality Management Plans for San Bernardino and Riverside Counties be reviewed and revised within two years of approval of the USEP. However, in consideration of the efforts of the Storm Water Quality Standards Task Force (SWQSTF), San Bernardino County Flood Control District and Riverside County Flood Control District recommended that reviewing and revising those programs and plans be performed based upon results of the Monitoring Program, the USEP, as well as SWQSTF investigations, which may require more than the proposed two years (see Attachment B, Comments # 7 and 62). Considering the significance of the SWQSTF

efforts, Board Staff concur with the recommendation and propose that a review and revision schedule for the subject programs and plans be developed in coordination with the responsible agencies based upon the results of the monitoring program, the USEP, as well as the efforts of the SWQSTF.

4. More specific language incorporated regarding Task 6 – Review/Revision of the Bacterial Indicator TMDL.

San Bernardino County Flood Control District and Riverside County Flood Control District expressed concern regarding the Regional Board's commitment to review and revision of the TMDL based upon monitoring results, results of the USEP, and SWQSTF efforts. Essentially, the two districts did not believe that there was enough specificity in the proposed Basin Plan Amendment for reviewing and revising the TMDL and that a "re-opener clause" should be included (see Attachment B, Comments #7 and 56). In response, Staff propose more specific language in the proposed BPA for "re-opening" the TMDL. The proposed language is shown in the Attachment to Resolution No. R8-2005-0001, Task 6.

5. Other Proposed Changes

- A. In response to comments, Board Staff propose to clearly indicate in the Basin Plan Amendment/TMDLs that if fecal coliform is replaced by (not merely supplemented by) *E. coli* in the Basin Plan as the appropriate bacterial indicator water quality objective for the protection of REC1 beneficial uses, then the fecal coliform provisions of approved Middle Santa Ana River Bacterial TMDLs would no longer be effective (see Attachment B, Comment #7). The proposed language is reflected in the Attachment to Resolution No. R8-2005-0001, 1.A Numeric Targets and in Task 6.
- B. Initially, Board Staff proposed that dischargers submit quarterly monitoring reports containing results of the proposed Watershed-Wide Monitoring Program. Board Staff expects that these reports will only contain brief descriptions of the monitoring activities as well as the monitoring results. Board Staff proposes that, in addition to these quarterly reports, dischargers submit Triennial Monitoring Reports containing summaries of monitoring activities, monitoring results, evaluations, analyses, and comparisons of monitoring results, recommendations, and other pertinent information relating to the monitoring plan and the TMDLs. The timing of the Triennial Monitoring Reports should be so that any findings based on the monitoring program that may justify changes to the TMDLs could be addressed in the Triennial Review of the Basin Plan. The proposed language is shown in the Attachment to Resolution No. R8-2005-0001, Task 3.
- C. Riverside County Flood Control and Water Conservation District commented that the TMDL did not directly address discharges associated with Phase II Non-Traditional MS4s (Attachment B, Comments #46 and 47). Further, San Bernardino Flood Control District commented that industrial dischargers covered under the Statewide General Industrial Stormwater Permit are also not addressed in the TMDL (Attachment B, Comment #57). Both Districts noted that operators of traditional MS4s, such as the Flood Control Agencies, do not have jurisdiction over these Phase II Non-Traditional facilities (including schools districts, community colleges and universities, military facilities, etc.) and thus cannot address bacterial indicator discharges associated with these facilities. Board Staff recognize this condition and have included a proposed provision in the TMDLs for addressing discharges associated with Phase II Non-Traditional facilities, industrial facilities covered by the Statewide General Industrial Stormwater Permit and industrial facilities covered by an individual Stormwater Permit

issued by the Regional Board. The proposed language is shown in the Attachment to Resolution No. R8-2005-0001, Task 4.

6. Tabulation of E. Coli Data

USEPA recommended that the *E. Coli* and enterococcus data collected as part of the TMDL sampling program should be included as part of the TMDL Report. Staff agree with this recommendation, particularly in light of the fact that Board Staff are proposing to include *E. coli* as an additional bacterial indicator in the TMDL. Therefore, the *E. coli*/Enterococcus monitoring data, along with comparisons of these data to the proposed *E. Coli* numeric targets are included in Attachment E to this Staff Report.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REQUIREMENTS

The basin planning process has been certified by the Secretary of Resources as functionally equivalent to the requirement for the preparation of an Environmental Impact Report or Negative Declaration. The Regional Board is required to complete an environmental assessment of any changes the Board proposes to make to the Basin Plan. Staff prepared an Environmental Checklist (Attachment B to the February 2005 TMDL Report), determining that there would be no significant adverse environmental impacts from the proposed Basin Plan Amendment. Based on comments received (Attachment B, Comment #33), staff has revised the environmental checklist to indicate that there may be environmental impacts to biological resources, hydrology and water quality, and utilities and service systems if certain projects are implemented (Attachment C). However, any such impacts from specific projects would be subject to a separate and complete environmental review.

STAFF RECOMMENDATION

Direct staff to prepare a Basin Plan amendment and related documentation to incorporate the TMDLs for Bacterial Indicators for Middle Santa Ana River Watershed Waterbodies as shown in the Attachment to Tentative Resolution No. R8-2005-0001, for consideration at a future public hearing.

ATTACHMENTS

- Attachment A – Tentative Resolution No. R8-2005-0001, with attached proposed (revised) Basin Plan amendment
- Attachment B – Responses to comments received from the scientific peer reviewer and from the public
- Attachment C – Environmental Checklist
- Attachment D – Comment Letters
- Attachment E – *E. Coli* and Enterococcus Monitoring Data from February 2002 through March 2004

ATTACHMENT A
Resolution No. R8-2005-0001

To be submitted at a later date

ATTACHMENT TO RESOLUTION NO. R8 2005-0001**Amendment to the Santa Ana Region Basin Plan**

(Proposed Basin Plan amendment changes are shown as in strikeout for deletions and underline for additions)

Chapter 5 - Implementation Plan

(NOTE: The following language is proposed to be added in Chapter 5 of the Basin Plan. If the amendments are approved, corresponding changes will be made to the Table of Contents, the List of Tables, page numbers, and page headers in the plan. Due to the two-column page layout of the Basin Plan, the location of tables in relation to text may change during final formatting of the amendments. For formatting purposes, the maps may be redrawn for inclusion in the Basin Plan, and the final layout may differ from that of the draft.)

Middle Santa Ana River Watershed

The Middle Santa Ana River Watershed covers approximately 488 square miles and lies largely in the southwestern corner of San Bernardino County, and the northwestern corner of Riverside County. A small part of Los Angeles County (Pomona/Claremont area) is also included. This watershed is comprised of three sub-watersheds. The first sub-watershed is the Chino Basin Watershed, which includes portions of San Bernardino County, Los Angeles County, and Riverside County. Surface drainage in this area is directed to Chino Creek and Cucamonga/Mill Creek and is generally southward, from the San Gabriel Mountains toward the Santa Ana River and the Prado Flood Control Basin. The second sub-watershed, the Riverside Watershed, is located in Riverside County. Surface drainage in this area is generally westward from the City of Riverside to the Santa Ana River, Reach 3. The ~~final~~ third sub-watershed, the Temescal Canyon Watershed, is also located in Riverside County. Surface drainage in this area is generally northward to Temescal Creek.

Land uses in the Middle Santa Ana River watershed include urban, agriculture, and open space. Although originally developed as an agricultural area, the watershed is being steadily urbanized. Incorporated cities in the Middle Santa Ana River watershed include Pomona, Chino Hills, Upland, Montclair, Claremont, Ontario, Rancho Cucamonga, Rialto, Chino, Fontana, Norco, Corona, and Riverside. In addition, there are several pockets of urbanized unincorporated areas. The current population of the watershed, based upon 2000 census data, is approximately 1.4 million people. The principal remaining agricultural area in the watershed is the area formerly known as the Chino Dairy Preserve. This area is located in the south-central part of the Chino Basin watershed and contains approximately 300,000 cows, which generate the waste equivalent of more than two million people. Recently, the cities of Ontario and Chino annexed the San Bernardino County portions of this area. The remaining portion of the former preserve, which is in Riverside County, remains unincorporated. Open space areas include National Forest lands and State Parks lands.

Middle Santa Ana River Watershed Bacterial Indicator Total Maximum Daily Loads(TMDLs)

Middle Santa Ana River Watershed waterbodies listed on the Clean Water Act Section 303(d) list of impaired waters due to ~~for violations of REC1 fecal coliform bacteria objectives~~ bacterial indicators addressed by this TMDL are shown in Table 5-9w.

Table 5-9w – Middle Santa Ana River Watershed ~~303(d)~~ Waterbodies on the 303(d) List Due to Bacterial Contamination

Waterbody, Reach
Santa Ana River, Reach 3
Chino Creek, Reach 1
Chino Creek, Reach 2
Mill Creek (Prado Area)
Cucamonga Creek, Reach 1
Prado Park Lake

~~Middle Santa Ana River Watershed Bacterial Indicator Total Maximum Daily Load (TMDL)~~

~~Middle Santa Ana River Watershed waterbodies shown in Table 5-9w are not attaining water quality standards due to excessive bacterial indicator densities (fecal coliform). During storm events, these waterbodies receive and transport runoff from urban, agricultural, and open space areas. During dry weather, these waterbodies receive and transport nuisance runoff, primarily from urban areas. Based on monitoring results, and observed waterbody conditions (fish kills and waste-laden stormflows), the Regional Board, from 1988 to 1998, placed these waterbodies on the 303(d) list of impaired waters due to excessive levels of bacterial indicators that exceeded established objectives for REC1 uses. The listings took place from 1988 to 1998.~~

A TMDL technical report prepared by Regional Board staff describes the bacterial indicator related problems in the Middle Santa Ana River Watershed waterbodies in greater detail and discusses the technical basis for the TMDLs that follow [Ref. # 1].

A. Middle Santa Ana River Watershed Bacterial Indicator TMDL Numeric Targets

Bacterial indicator numeric targets for the Middle Santa Ana River Watershed waterbodies shown in Table 5-9wx are based, in part, on the fecal coliform water quality objective specified in Chapter 4 for the protection of body-contact recreation (REC1) in inland surface waters.

Recognizing that, in the future, *Escherichia coli* (*E. coli*) may be incorporated into the Basin Plan as new bacterial water quality objectives for REC1, alternative numeric targets for *E. coli* are also specified. These targets are based on *E. coli* criteria recommended by the U.S. Environmental Protection Agency [Ref #2]. The *E. coli* levels were chosen to roughly correspond to the health risk level associated with the fecal coliform objectives.

The numeric targets for both bacterial indicators incorporate an explicit 10% margin of safety to address uncertainties recognized in the development of the TMDLs.

These ~~is~~ numeric targets ~~are~~ specified -as follows:

Fecal coliform: log mean less than ~~200~~ 180 organisms/100 mL based on five or more samples per 30 day period, and not more than 10% of the samples exceed ~~400~~ 360 organisms/100 mL for any 30-day period.

E. coli: log mean less than 113 organisms/100 mL based on five or more samples per 30-day period, and not more than 10% of the samples exceed 212 organisms/100mL for any 30 day period.

The fecal coliform numeric targets (and other fecal coliform related provisions of these TMDLs) will become ineffective upon the replacement of the fecal coliform REC1 objectives in the Basin Plan with REC1 objectives based on E. coli Incorporation of new E. coli objectives will be considered through the Basin Planning process.

B. Middle Santa Ana River Watershed Bacterial Indicator TMDLs, Wasteload Allocations, Load Allocations and Compliance Dates

As discussed in the technical TMDL Report, the bacterial indicator TMDLs ~~is~~ are expressed in terms of density since it is the number of organisms in a given volume of water (i.e., their density), and not their mass that is significant with respect to public health and the protection of beneficial uses. Similarly, the wasteload allocations for point source discharges (WLAs) and load allocations for nonpoint source discharges (LAs) are also based on density. The density-based WLAs and LAs do not add up to equal the TMDLs, since this is not scientifically valid. To achieve the density-based TMDLs, it is simply necessary to assure that each WLA and LA itself meets the density-based TMDL. As indicated in Table 5-9x, the TMDLs, WLAs and LAs ~~specified~~ also include a 10% margin of safety (see C., below) applied to are equivalent to the existing Basin Plan fecal coliform objective for REC1 for inland surface waters and to the alternative indicator ~~E. coli~~ E. coli criteria recommended by the U.S. Environmental Protection Agency. Again, the ~~E. coli~~ E. coli criteria were chosen to correspond to the health risk level associated with the fecal coliform objectives.

WLAs are specified for urban discharges and agricultural runoff and discharges from Confined Animal Feeding Operations, including stormwater, ~~while~~ LAs are specified for runoff from other types of agriculture and from natural sources (open space/undeveloped forest land). TMDLs, WLAs and LAs are specified for both dry weather discharges and wet weather discharges, with separate compliance schedules. An extended schedule for compliance with the wet weather TMDLs is specified in light of the expected increased difficulty in achieving compliance under these conditions.

Table 5-9x – Total Maximum Daily Loads, Waste Load Allocations, and Load Allocations for Fecal Coliform-Bacterial Indicators in Middle Santa Ana River Waterbodies^{a,b}

<u>Indicator</u>	<u>Total Maximum Daily Loads for Fecal Coliform-Bacterial Indicators</u>	<u>Waste Load Allocation for Fecal Coliform-Bacterial Indicators in Urban Runoff including stormwater discharges</u>	<u>Waste Load Allocation for Fecal Coliform-Bacterial Indicators in Confined Animal Feeding Operations discharges</u>	<u>Load Allocation for Fecal Coliform-Bacterial Indicators in Agricultural runoff discharges</u>	<u>Load Allocation for Fecal Coliform-Bacterial Indicators from Natural Sources</u>
Dry Summer Conditions: April 1 through October 31, as soon as possible, but no later than December 31, 2012					
<u>Fecal coliform</u>	5-sample/30-days Logarithmic Mean less than 200 180 organisms/100mL, and not more than 10% of the samples exceed 400360 organisms/100mL for any 30-day period.	5-sample/30-days Logarithmic Mean less than 200 180 organisms/100mL, and not more than 10% of the samples exceed 400360 organisms/100mL for any 30-day period.	5-sample/30-days Logarithmic Mean less than 200 180 organisms/100mL, and not more than 10% of the samples exceed 400360 organisms/100mL for any 30-day period.	5-sample/30-days Logarithmic Mean less than 200 180 organisms/100mL, and not more than 10% of the samples exceed 400360 organisms/100mL for any 30-day period.	5-sample/30-days Logarithmic Mean less than 200 180 organisms/100mL, and not more than 10% of the samples exceed 400360 organisms/100mL for any 30-day period.
<u>E. coli</u>	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.
Wet Winter Conditions: November 1 through March 31, as soon as possible, but no later than December 31, 2025					
<u>Fecal coliform</u>	5-sample/30-day Logarithmic Mean less than 180 organisms/100mL, and not more than 10% of the samples exceed 360 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 180 organisms/100mL, and not more than 10% of the samples exceed 360 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 180 organisms/100mL, and not more than 10% of the samples exceed 360 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 180 organisms/100mL, and not more than 10% of the samples exceed 360 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 180 organisms/100mL, and not more than 10% of the samples exceed 360 organisms/100mL for any 30-day period.
<u>E. coli</u>	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.	5-sample/30-day Logarithmic Mean less than 113 organisms/100mL, and not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.

^a To be achieved as soon as possible, but no later than December 31, 2020 dates specified.

^b The fecal coliform TMDLs, WLAs and LAs become ineffective upon the replacement of the REC1 fecal coliform objectives in the Basin Plan by approved REC1 objectives based on *E. coli*.

C. Margin of Safety

~~For the Bacterial Indicator TMDL in the Middle Santa Ana River Watershed, a 10% substantial and adequate margin of safety is implicitly explicitly incorporated into the Bacterial Indicator TMDLs for the Middle Santa Ana River Watershed to account for unknowns, such as bacterial regrowth, and by the fact that the TMDL and allocations do not account for bacteria dilution and organism die-off. In addition, a margin of safety is assumed by applying the existing water quality objectives as the TMDL because conservative methods were used in developing the baseline water quality criteria upon which the water quality objectives are based. As additional data on bacterial dynamics in the Middle Santa Ana River watershed are developed, the margin of safety can be adjusted accordingly.~~

D. Seasonal Variations/Critical Conditions

~~The Basin Plan REC1 fecal coliform objectives apply year-round; no distinctions based on climate or other conditions that may affect actual REC1 use are specified. To assure that the REC1 objectives are consistently achieved, the TMDLs requires compliance with the WLAs and LAs year round. As shown in Table 5-9x, different compliance dates are specified for dry season discharges and wet season discharges. This ensures that dry season recreational beneficial uses are addressed on a priority basis. Additional time is allowed to address complexities associated with the control of wet weather discharges.~~

E. TMDL Implementation

Implementation is expected to result in compliance with the water quality objectives/numeric targets for fecal coliform and with the numeric targets for *E. coli*. The intent is to ensure protection of the REC1 beneficial uses of Middle Santa Ana River Watershed waterbodies. Collection of additional monitoring data is critical to developing long-term solutions for bacterial indicator control, as well as to consider whether changes to the TMDL are appropriate. With that in mind, the requirements for submittal of plans and schedules to implement the TMDLs -take into consideration the need to develop and implement effective short-term solutions, as well as allow for the development of long-term solutions once additional data have been generated.

Implementation of tasks and schedules as specified in Table 5-9y is expected to achieve compliance with the TMDLs and, thereby, water quality standards. Each of these tasks is described below.

Table 5-9y – Middle Santa Ana River Watershed Bacterial Indicator TMDL Implementation Plan/Schedule Due Dates

Task	Description	Compliance Date-As soon As Possible but No Later Than
TMDL Phase 1		
Task 1	Revise Existing Waste Discharge Requirements	(*9 months after BPA approval*)
Task 2	Identify Agricultural Operators	(*1 month after BPA approval*)
Task 3	Develop Watershed-Wide Bacterial Indicator Water Quality Monitoring Program Implement Watershed-Wide Bacterial Indicator Water Quality Monitoring Program	(*3 months after BPA approval*) Upon Regional Board approval Quarterly reports due in January, April, July, and October of each year <u>Triennial reports due every 3 years beginning in 2007.</u>
Task 4	Urban Discharges 4.1 Develop and Implement Bacterial Indicator Urban Source Evaluation Plan 4.2 San Bernardino County MS4: Revise Municipal Storm Water Management Program (MSWMP) 4.3 Riverside County MS4: Revise Drainage Area Management Plan (DAMP) 4.4 San Bernardino County MS4: Revise Water Quality Management Plan (WQMP) 4.5 Riverside County MS4: Revise Water Quality Management Plan (WQMP)	Plan/schedule due 4.1 (*3 6 months after BPA approval*); 4.2 Within 2 years of approval of the Urban Source Evaluation Plan <u>Dependent on Task 4.1 results (see text)</u> 4.3 Within 2 years of approval of the Urban Source Evaluation Plan <u>Dependent on Task 4.1 results (see text)</u> 4.4 Within 2 years of approval of the Urban Source Evaluation Plan <u>Dependent on Task 4.1 results (see text)</u> 4.5 Within 2 years of approval of the Urban Source Evaluation Plan <u>Dependent on Task 4.1 results (see text)</u>
Task 5	Agricultural Discharges 5.1 Develop and Implement Bacterial Indicator Agricultural Source Evaluation Plan 5.2 Develop and Implement Bacterial Indicator Agricultural Source Management Plan	Plan/schedule due 5.1 (*6 months after BPA approval*); 5.2 Within 2 years from submittal/approval of Agriculture Source Evaluation Report <u>Dependent on Task 5.1 results (see text)</u>
Task 6	Review of TMDLs/WLAs/LAs	Once every 3 years to coincide with the Regional Board's triennial review, <u>or more frequently as warranted</u>

[Note: BPA => Basin Plan Amendment]

Task 1: Review and/or Revise Existing Waste Discharge Requirements

There are three Waste Discharge Requirements (WDRs) issued by the Regional Board regulating discharge of various types of wastes in the watershed. On or before (**9 months from the effective date of this Basin Plan amendment**), each of these WDRs shall be reviewed and revised as necessary to implement the TMDLs, including the appropriate wasteload allocations, compliance schedules and/or monitoring program requirements.

- 1.1 Waste Discharge Requirements for the San Bernardino County Flood Control and Transportation District, the County of San Bernardino and the Incorporated Cities of San Bernardino County within the Santa Ana Region, Areawide Urban Runoff, NPDES No. CAS 618036 (Regional Board Order No. R8-2002-0012). The current Order has provisions to address TMDL issues (see Task 4, below). In light of these provisions, revision of the Order may not be necessary to address TMDL requirements.
- 1.2 Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside and the Incorporated Cities of Riverside County within the Santa Ana Region, Areawide Urban Runoff, NPDES No. CAS 618033 (Regional Board Order No. R8-2002-0011). The current Order has provisions to address TMDL issues (see Task 4, below). In light of these provisions, revision of the Order may not be necessary to address TMDL requirements.
- 1.3 General Waste Discharge Requirements for Concentrated Animal Feeding Operations (Dairies and Related Facilities) within the Santa Ana Region, NPDES No. CAG018001 (Regional Board Order No. 99-11). Updated waste discharge requirements for Concentrated Animal Feeding Operations are expected to be considered by the Regional Board in 2005. These requirements will include appropriate TMDL requirements.

Other waste discharge requirements may be reviewed and/or revised to address bacterial indicator discharges as appropriate.

Task 2: Identify Agricultural Operators

On or before (**1 month from the effective date of this BPA*), the Regional Board shall develop a list of all known agricultural owners/operators in the Middle Santa Ana River watershed that will be responsible for implementing requirements of ~~this~~these TMDLs. The Regional Board will send a notice to these operators informing them of their TMDL responsibility and alerting them to the potential regulatory consequences of failure to comply.

To implement the agricultural load allocations for non-Concentrated Animal Feeding Operations, monitoring program requirements specified in Task 3 and the agricultural source evaluation studies (Task 5), the Regional Board may issue waste discharge requirements or a waiver of such waste discharge requirements that is conditioned on satisfactory compliance with these TMDL elements.

Task 3: Watershed-Wide Bacterial Indicator Water Quality Monitoring Program

No later than (**3 months from effective date of this Basin Plan amendment**), the US Forest Service, the County of San Bernardino, the County of Riverside, the cities of Ontario, Chino, Chino Hills, Montclair, Rancho Cucamonga, Upland, Rialto, Fontana, Norco, Riverside, and Corona, Pomona and Claremont and agricultural operators in the watershed, shall as a group, submit to the Regional Board for approval a proposed watershed-wide monitoring program that will provide data necessary to review and update the

TMDLs. Data to be collected and analyzed shall address, at a minimum, -determination of compliance with the TMDLs, WLAs and LAs.

At a minimum, the stations specified in Tables 5-9z and 5-9aa and shown in Figure 5-6, at the frequency specified in Tables 5-9z and 5-9aa, shall be considered for inclusion in the proposed monitoring plan. If one or more of these monitoring stations are not included, the rationale shall be provided and proposed alternative monitoring locations shall be identified in the proposed monitoring plan. The proposed monitoring plan shall also include a plan to compile streamflow measurements at existing USGS stream gauging stations.

At a minimum, samples shall be analyzed for the following constituents:

- Fecal Coliform
- Escherichia Coliform (*eE. coli*)
- Enterococcus
- Total Suspended Solids
- PpH
- Temperature
- Electrical Conductivity
- Dissolved Oxygen
- Turbidity

The proposed monitoring plan shall be implemented upon Regional Board approval at a duly noticed public meeting. Quarterly reports summarizing and including copies of the data collected during the monitoring period shall be submitted by the 25th day of the month following the end of each calendar quarter (i.e., January, April, July, and October) of each year. In order to facilitate review and update of the numeric targets and/or the TMDLs, WLAs, LAs, a triennial report summarizing the data collected for the preceding 3 year period and evaluating compliance with the WLAs/LAs shall be submitted by February 15 of each third year beginning in 2007.

In lieu of this coordinated monitoring plan, one or more of the parties identified above may submit a proposed individual or group monitoring plan for Regional Board approval. Any such individual or group monitoring plan is due no later than *(*3 months from effective date of this Basin Plan amendment*)* and shall be implemented upon Regional Board approval at a duly noticed public meeting. Quarterly reports summarizing and including copies of the data collected during the monitoring period shall be submitted by the 25th day of the month following the end of each calendar quarter (i.e., January, April, July, and October) of each year. In order to facilitate review and update of the numeric targets and/or the TMDLs, WLAs, LAs, a triennial report summarizing the data collected for the preceding 3 year period and evaluating compliance with the WLAs/LAs shall be submitted by February 15 of each third year beginning in 2007.

It may be that implementation of these monitoring requirements will be required through the issuance of Water Code Section 13267 letters to the affected parties. The monitoring plan(s) will be considered by the Regional Board and shall be implemented upon the Regional Board's approval.

Table 5-9z – Watershed Minimum Required Weekly Sampling Station Locations

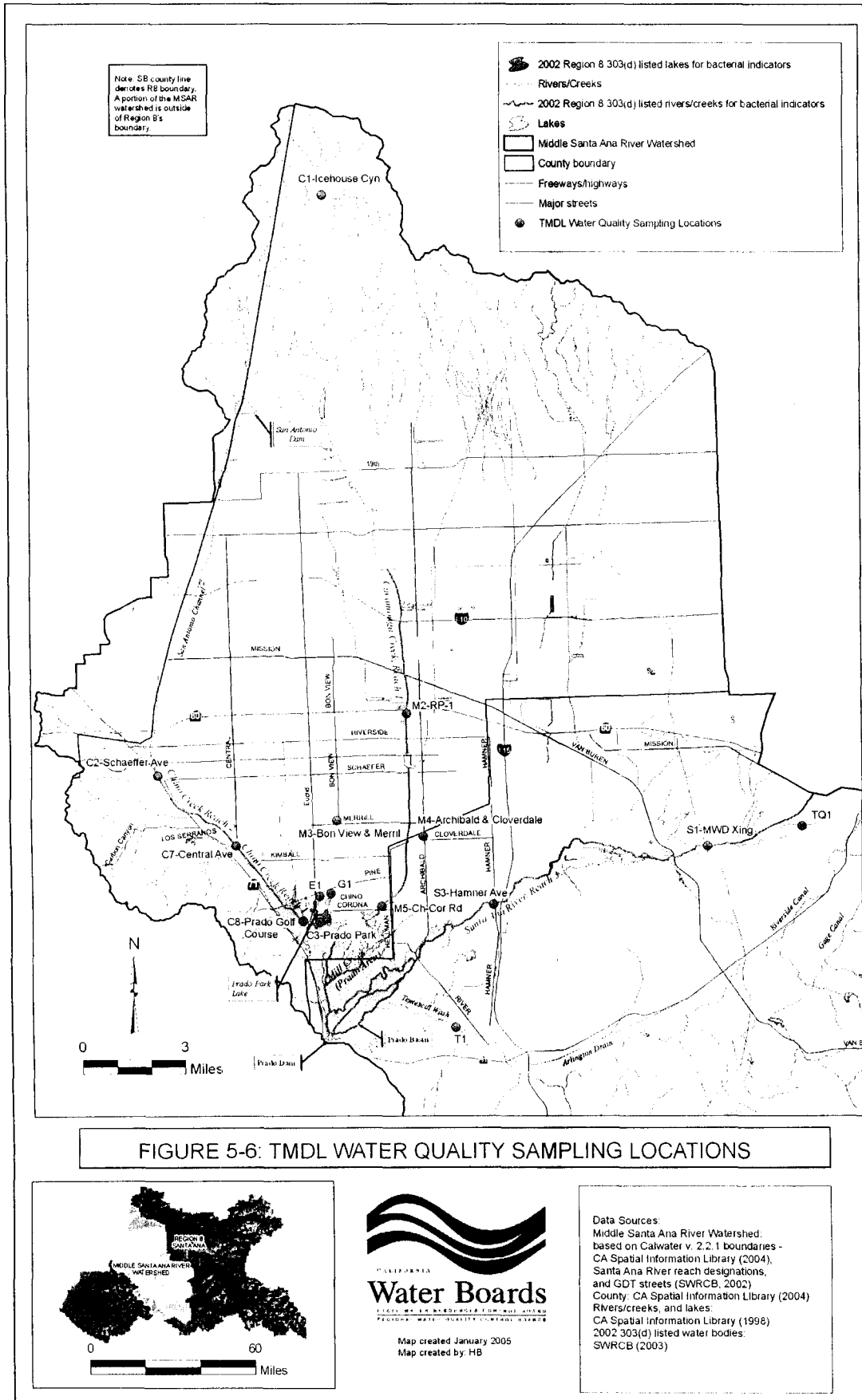
Station Number	Station Description
C1	Icehouse Canyon Creek
C2	Chino Creek at Schaeffer Avenue
C3	Prado Park Lake at lake outlet
C7	Chino Creek at Central Avenue
C8	Chino Creek at Prado Golf Course
M2	Cucamonga Creek at Regional Plant No. 1
M5	Mill Creek at Chino–Corona Road
S1	Santa Ana River at MWD Crossing
S3	Santa Ana River at Hamner Avenue
T1	Temescal Wash
TQ1	Tequesquite Arroyo at Palm Avenue

Frequency of sampling: dry weather – weekly; wet weather – minimum of one sample/storm event for 5 storm events/year.

Table 5-9a-a --Additional Watershed Storm Event Sampling Locations

Station Number	Station Description
M3	Bon View Avenue @ Merrill Avenue
M4	Archibald Avenue @ Cloverdale Avenue
G1	Grove Channel @ Pine Avenue
E1	Euclid Avenue Channel @ Pine Avenue

Frequency of sampling: wet weather – one sample/storm event for 5 storm events/year; dry weather – none.



Task 4: Urban Discharges

~~Phase I~~ Urban discharges, including stormwater runoff, include those from the cities and unincorporated communities in the Middle Santa Ana River Watershed. These discharges are regulated under the MS4 NPDES permits identified in Tasks 1.1 and 1.2 (Review and Revise Existing Waste Discharge Requirements), above. The requirements of these NPDES permits differ somewhat and therefore the TMDL implementation requirements that pertain to the permittees under each permit also vary slightly, as shown below¹.

4.1 Develop and Implement Bacterial Indicator Urban Source Evaluation Plans

On or before (**36 months from the effective date of this Basin Plan amendment**), the County of San Bernardino, the County of Riverside, the cities of Ontario, Chino, Chino Hills, Montclair, Rancho Cucamonga, Upland, Rialto, Fontana, Norco, Riverside, and Corona, Pomona and Claremont shall develop a Bacterial Indicator Urban Source Evaluation Plan(s) (USEP). This plan shall include steps needed to identify specific activities, operations, and processes in urban areas that contribute bacterial indicators to Middle Santa Ana River Watershed waterbodies. The USEP shall be implemented upon Regional Board approval at a duly noticed public meeting.

4.2 Revise the San Bernardino County Municipal Storm Water Management Program (MSWMP)

Provision XVI.3. of Order No. R8-2002-0012 (see 1.1, above) requires the permittees to revise their Municipal Storm Water Management Program (MSWMP) to include TMDL requirements.

~~As soon as possible but no later than 2 years from the date of Regional Board approval of the USEP, Based on the results of Task 4.1 or other studies conducted in the watershed, the co-~~ permittees shall submit for Regional Board approval, a plan and schedule to review and revise the MSWMP as necessary to incorporate measures to address the results of the USEP. Further review and revision of the MSWMP needed to address these TMDLs shall be completed in accordance with the requirements of Order No. R8-2002-0012 or amendments thereto that are adopted by the Regional Board at a public hearing. The MSWMP revisions shall include schedules for meeting the bacterial indicator wasteload allocations based on the schedule established in these TMDLs. In order to facilitate any needed update of the numeric targets and/or the TMDLs and urban discharge WLAs, the proposed schedule shall take into consideration the Regional Board's triennial review schedule. The permittees shall also provide a proposal and schedule for 1) evaluating the effectiveness of BMPs and other control actions implemented and 2) evaluating compliance with the bacterial indicator waste load allocations for urban runoff. The proposal must be implemented upon approval by the Regional Board after public notice and public hearing, or upon approval by the Executive Officer if no significant comments are received during the public notice period.

4.3 Revise the Riverside County Drainage Area Management Plan (DAMP)

Provision XIII.B. of Order No. R8-2002-0011 (see 1.2, above) requires the permittees to revise their Drainage Area Management Plan (DAMP) to include TMDL requirements.

¹ The San Bernardino MS4 permit requires the development and implementation of a Municipal Stormwater Management Program (MSWMP) to address stormwater discharges from existing urban activities. For the Riverside County MS4 permit, the Drainage Area Management Plan (DAMP) addresses stormwater discharges from existing urban activities.

~~As soon as possible but no later than 2 years from the date of Regional Board approval of the USEP~~ Based on the results of Task 4.1 or other studies conducted in the watershed, the co-permittees shall submit for Regional Board approval, a plan and schedule to review and revise the DAMP as necessary to incorporate measures to address the results of the USEP. Further review and revision of the DAMP needed to address ~~this~~ these TMDLs shall be completed in accordance with the requirements of Order No. R8-2002-0011 or amendments/updates thereto that are adopted by the Regional Board at a public hearing. The DAMP revisions shall include schedules for meeting the ~~final~~ bacterial indicator wasteload allocations based on the schedule established in ~~this~~ these TMDLs. In order to facilitate ~~any needed~~ review and update of the numeric targets and/or the TMDLs and urban discharge WLAs, the proposed schedule shall take into consideration the Regional Board's triennial review schedule. The revised DAMP shall also include a proposal and schedule for 1) evaluating the effectiveness of BMPs and other control actions implemented and 2) evaluating compliance with the bacterial indicator waste load allocations for urban runoff. The proposal must be implemented upon approval by the Regional Board after public notice and public hearing, or upon approval by the Executive Officer if no significant comments are received during the public notice period.

4.4 **Revise the San Bernardino County Water Quality Management Plan (WQMP)**

Provision XII.B. 1. of Order No. R8-2002-0012 requires the permittees to develop and submit a WQMP for new developments and significant redevelopments by January 2004 for the Executive Officer's approval.

~~As soon as possible but no later than 2 years from the date that the USEP is approved,~~ Based on the results of Task 4.1 or other studies conducted in the watershed, the permittees shall submit for Regional Board approval and plan and schedule to a review and revised the WQMP that addresses the bacterial indicator input from new developments and significant redevelopments to assure compliance with the bacterial indicator wasteload allocations for urban runoff. Further review and revision of the WQMP may be necessary to assure that TMDL requirements are addressed shall be completed in accordance with the requirements of Order No. R8-2002-0012 or amendments/updates thereto that are adopted by the Regional Board at a public hearing.

4.5 **Revise the Riverside County Water Quality Management Plan (WQMP)**

Provision VIII.B. of Order No. R8-2002-0011 (see 1.2, above) requires the permittees to develop and submit a WQMP for new developments and significant redevelopments by June 2004 for approval. On September 17, 2004, the Board approved a WQMP developed by the permittees. The approved WQMP includes source control BMPs, design BMPs and treatment control BMPs. Further revisions to the WQMP may be necessary to meet the WLA for urban runoff.

~~As soon as possible but no later than 2 years from the date that the USEP is approved~~ Based on the results of Task 4.1 or other studies conducted in the watershed, the permittees shall submit for Regional Board approval a plan and schedule for a review and revision of the WQMP that addresses the bacterial indicator input from new developments and significant redevelopments to assure compliance with the bacterial indicator wasteload allocations for urban runoff. Further review and revision of the WQMP may be necessary to assure that TMDL requirements are addressed shall be completed in accordance with the requirements of Order No. R8-2002-0011 or amendments/updates thereto that are adopted by the Regional Board at a public hearing.

If the results of studies conducted pursuant to Tasks 3 and 4.1 above demonstrate that either the Phase II non-traditional small MS4 discharges covered under the statewide Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Systems (Order No. 2003-0005-DWQ) or industrial discharges from facilities covered by the statewide Industrial Stormwater General Permit (Order

97-03-DWQ) or any Regional Board individual industrial permit, are responsible, to a significant degree, for exceedances of the urban WLAs, the Regional Board will take the appropriate regulatory steps to address these discharges.

Task 5: Agricultural Discharges

Agricultural discharges, including stormwater runoff from agricultural land uses include those from concentrated animal feeding operations and irrigated and dry-land farming in the Middle Santa Ana River Watershed. Concentrated animal feeding operations are regulated under WDRs (see Task 1.3, above); irrigated agriculture and dry-land farming are not currently regulated.

5.1 Develop and Implement Bacterial Indicator Agricultural Source Evaluation Plans

On or before (**6 months from the effective date of this Basin Plan amendment**), concentrated animal feeding facility operators and agricultural operators in the Middle Santa Ana River Watershed shall develop and implement Bacterial Source Agricultural Source Evaluation Plans (AGSEP). These plans shall include steps needed to identify specific activities, operations, and processes in agricultural areas that contribute bacterial indicators to Middle Santa Ana River Watershed waterbodies. The AGSEP shall be implemented upon Regional Board approval at a duly noticed public meeting.

The Regional Board expects that the AGSEP will be submitted and implemented pursuant to these TMDL requirements. Where and when necessary to implement these requirements, the Regional Board will utilize appropriate waste discharge requirements, including those for concentrated animal feeding operations (see 1.3, above), or other Water Code authorities.

In lieu of a coordinated source evaluation plan, one or more of the parties identified above may submit a proposed individual or group AGSEP to conduct the above studies for areas within their jurisdiction. Any such individual or group plan shall also be submitted for Regional Board approval no later than. (**6 months from the effective date of this Basin Plan amendment**). This AGSEP shall be implemented upon Regional Board approval at a duly noticed public meeting.

5.2 Develop and Implement a Bacterial Indicator Agricultural Source Management Plan

~~No later than 2 years from the approval of the AGSEP~~Based on the results of Task 5.1 or other studies conducted in the watershed, concentrated animal feeding operators and agricultural operators within the Middle Santa Ana River Watershed shall, as a group, submit a proposed Bacterial Indicator Agricultural Source Management Plan (BASMP). The BASMP shall be implemented upon Regional Board approval at a duly noticed public meeting. At a minimum, the BASMP shall include, plans and schedules for the following:

- A. implementation of bacterial indicator controls, BMPs and reduction strategies designed to meet load allocations;
- B. evaluation of effectiveness of BMPs; and
- C. development and implementation of compliance monitoring program(s).

The Regional Board expects that the BASMP will be submitted and implemented pursuant to these TMDL requirements. Where and when necessary to implement these requirements, the Regional Board will utilize appropriate waste discharge requirements or other Water Code authorities.

In lieu of a coordinated plan, one or more of the parties identified above may submit a proposed individual or group BASMP to develop and implement the above plan for areas within their jurisdiction. Any such individual or group plan shall also be submitted for Regional Board approval no later than 2

years from the approval of the AGSEP. This BASMP shall be implemented upon Regional Board approval at a duly noticed public meeting.

Task 6: Review/Revision of the Bacterial Indicator TMDL (TMDL “Re-opener”)

The basis for the TMDLs and implementation schedule will be re-evaluated at least once every three years² to determine the need for modifying the load and wasteload allocations, numeric targets and TMDLs. Regional Board staff will continue to review all data and information generated pursuant to the TMDL requirements on an ongoing basis. Based on results generated through the monitoring programs, special studies, modeling analysis, efforts of the Storm Water Quality Standards Task Force³ and/or special studies by one or more responsible parties, changes to the TMDLs, including revisions to the numeric targets, WLAs and LAs, may be warranted. Such changes would be considered through the Basin Plan Amendment process.

The Regional Board is committed to the review of this TMDL every three years, or more frequently if warranted by the results of monitoring and/or other relevant studies

References

1. California Regional Water Quality Control Board, Total Maximum Daily Load for Bacterial Indicators in the Middle Santa Ana River Watershed, February 3, 2005
2. US Environmental Protection Agency (USEPA), Ambient Water Quality Criteria for Bacteria, 1986

² The three-year schedule will coincide with the Regional Board’s triennial review schedule.

³ Stakeholders formed the Storm Water Quality Standards Task Force (Task Force) in 2002 to support review and update of the bacterial quality objectives for REC1 waters and to review the REC1 designations themselves to assure their accuracy. Participants include representatives from the flood control agencies from the 3 counties within the Santa Ana Region, POTW dischargers and stormwater staff from various municipalities in the watershed. Environmental groups and Board and USEPA staff are also participants.

Attachment B

Response to Comments

PETER KOZELKA

United States Environmental Protection Agency – Region IX
(Email dated March 3, 2005)

Comment #1:

Move Section 2.5 to 4 [in the TMDL Report]; present and discuss applicable WQS in the numeric targets section (not by reference).

Response:

We note that there may exist differences of opinion regarding the formatting and structure for the TMDL Report; however, Board Staff is not recommending any changes to the Middle Santa Ana River Bacterial Indicator TMDL Report (TMDL Report) format. This Report has already been presented at a Regional Board workshop on February 3, 2005. Changes to the TMDLs proposed in the TMDL Report will be addressed in revisions to the recommended Basin Plan amendment per se (Attachment to Resolution No. R8-2005-0001). The report being prepared for the second workshop regarding these TMDLs (scheduled for June 24, 2005), as well as staff's responses to comments, will identify and discuss these changes.

Comment #2:

I recognize that you have *E. coli* in the Implementation Plan monitoring but I strongly recommend you include these as alternative targets in Section 4, after all they will soon become State WQOs [water quality objectives]. You should present what the *E. coli*/entero [enterococcus] levels are to give people an idea of what targets may appear on the horizon.

Response:

The TMDLs and numeric targets specified in the TMDL Report are based upon water quality standards currently established in the Regional Board's Basin Plan. As noted in the TMDL Report, Board Staff acknowledges that new bacterial indicator water quality standards utilizing *E. coli* in freshwater are likely to be adopted into the Basin Plan in the near future. In fact, Regional Board staff are participating with stakeholders in the Storm Water Quality Standards Task Force (SWQSTF) efforts to evaluate the new bacterial indicators. Staff notes that other comments received on these proposed TMDLs also recommend the incorporation of alternative bacterial indicators. Therefore, Board Staff proposes that *E. coli* be added to the proposed TMDLs as a numeric target, and that the proposed *E. coli* TMDLs, Waste Load Allocations, and Load Allocations include a 10% margin of safety (see Comment #3). These recommended revisions are shown in the Attachment to Resolution No. R8-2005-0001.

Stakeholders and dischargers likely to be affected by the TMDL are, or have been participating in the TMDL workgroup process and/or the SWQSTF process. The new bacterial indicators and their possible levels have been discussed extensively during both processes. Staff agrees that *E. coli* (and enterococcus) data that were collected as part of the TMDL monitoring program should be included as part of the TMDL record, particularly in light of the fact that staff is recommending the addition of *E. coli* as a numeric target. Therefore, the *E. coli* and enterococcus data are presented in Appendix E to the Staff Report being prepared for the June 24, 2005 workshop.

Comment #3:

Margin of Safety (MOS) of zero??? General principles of bacterial re-growth suggest that some MOS is worthy, even if you don't know specifically what is happening in the watershed. Unless you have data that shows re-growth is NOT occurring, then we must assume that it is. Therefore, the TMDL should be set lower than the standard, not at the standard.

Response:

As stated in the TMDL Report, Board Staff initially proposed using an implicit margin of safety to account for uncertainty with the TMDLs. However, Board Staff is persuaded that, as pointed out by USEPA, Dr. Marylynn Yates (the scientific peer reviewer)(see Comments # 79, 80, and 81), Riverside County Flood Control and Water Conservation District (see Comments #7, 18 and 45), and San Bernardino County Flood Control District (see Comments #53 and 54), the uncertainty surrounding bacterial re-growth must be taken into consideration. For that reason, Board Staff now recommends that the TMDLs incorporate an explicit 10% Margin of Safety. Since the proposed WLAs and LAs are equal to the TMDLs, a 10% Margin of Safety is also proposed for the WLAs and LAs.

STEVE STUMP

**Riverside County Flood Control and Water Conservation District
(Letter dated March 10, 2005)**

Comment #4:

[T]he District can only provide preliminary comments at this time and requests that a second public workshop be scheduled to allow for more thoughtful and considered comments to be presented to the Regional Board by the District and other interested stakeholders.

Response:

A second workshop will be held and is tentatively scheduled for the Regional Board's June 24, 2005 meeting. It is likely that the TMDLs will be scheduled for consideration of adoption at the Board's August 2005 meeting. The second workshop is appropriate in light of changes to the TMDLs that Board Staff recommends based on consideration of comments received, including those from the District (see below).

It is worth noting that Board Staff believes that since District staff (and other stakeholders) have attended TMDL Workgroup meetings and participated in development of the TMDLs, there has already been substantial opportunity for public consideration of the proposed TMDLs. Board Staff notes also that the public comment period to review and provide comments on revisions to the proposed TMDLs extends at least 45 days prior to the hearing for consideration of adoption of the TMDLs, and that comments at the public hearing are also welcome.

Comment #5:

The purpose of the bacterial indicators as originally developed was to instigate studies or surveys to identify sources of human waste contamination such as leaking septic systems or broken sanitary sewer lines. Absent such sources or other evidence of human waste contamination, the elevated levels of bacterial indicators are considered as "false positives" and no further action is needed. The TMDL Report forgoes investigation of these potential sources of human waste contamination. Instead, the TMDL Report proceeds with the assumption that the bacterial indicators constitute contamination and that runoff source controls, especially Urban Runoff controls, are required.

Response:

The purpose of the original development of bacterial indicators is irrelevant to the development of the proposed TMDLs. The Basin Plan specifies bacterial quality objectives that apply to the Middle Santa Ana River streams, and other surface waters in the Region. The Regional Board placed the subject waterbodies on the 303(d) list based upon data that indicated that these objectives are being violated. Pursuant to federal law and regulation, the 303(d) listing triggered the need to develop TMDLs to address the violations of these water quality standards. The TMDL development process included a monitoring program designed to evaluate general land use types as possible bacterial indicators and to evaluate the impairment status of the subject waterbodies. As stated above, the District participated in this development, monitoring, and evaluation process. In the TMDL Report, Board Staff acknowledges that more information and study are needed to provide more specific information regarding the sources of bacterial indicators. The proposed implementation plan includes tasks involving gathering more information and studying sources in more detail. Extended compliance schedules are included in the proposed TMDLs to allow these investigations to take place and to provide data needed to revise the TMDLs, WLAs (including that for urban runoff) and LAs.

Comment #6:

As noted in the TMDL Report, USEPA conducted studies to evaluate bacterial indicator organisms other than fecal coliform. The purpose of the research studies was to examine the relationship between swimming-associated illness and the microbiological quality of the water used by recreational bathers. The results of these studies demonstrated that fecal coliforms possess little or no correlation to swimming-associated gastroenteritis. Two indicator organisms, *E. coli* and enterococci, showed a strong correlation with the incidence of waterborne infectious disease in fresh waters.

Response:

Board Staff are aware of USEPA's studies and the results. Considering the comments of USEPA, the District, and San Bernardino County Flood Control District (see below), Board Staff now propose including *E. coli* TMDLs, WLAs and LAs. See Response to Comment #2.

Comment #7:

To conform to the (SWQTF) schedule for adoption of the bacterial indicator TMDL, the District recommends:

1. Adoption of an interim implementation plan for the TMDL that focuses stakeholder efforts on supporting SWQTF efforts and continued watershed monitoring in order to answer the following questions:
 - a. What are the sources of bacteria in Reach 3 of the Santa Ana River[?]; and
 - b. What are the impacts of bacterial indicator transport, re-growth and decay in Reach 3 of the Santa Ana River[?]
2. Incorporation of an explicit "reopener clause" requiring the bacterial indicator TMDL to be updated to be consistent with the finding of the SWQTF and any conclusions from additional data collected by the TMDL stakeholders upon approval of the finding by the Regional Board. Once the TMDL has been updated to be consistent with the agreed upon findings of the SWQTF studies, additional implementation plan requirements including modification of stakeholder compliance documents and compliance monitoring (Tasks 3, 4, and 5) can be pursued.

Response:

Task 6 of the proposed Basin Plan Amendment commits the Regional Board to review and revise the TMDLs every three years or more frequently if warranted by the results of monitoring and/or other relevant studies, including the work and/or studies undertaken by the Stormwater Quality Standards Task Force (SWQSTF, or, as referred to by the District, SWQTF). This serves as the "re-opener clause." Board Staff certainly agrees that if the SWQSTF effort results in amendments to the Basin Plan (as it is expected to do for at least the bacterial indicators), then changes to the TMDLs must be made as appropriate to assure that control measures are justified and implemented in a fair and effective manner. (As a matter of clarification, it is worthwhile to note that the TMDLs would not be modified based on "agreed upon findings of the SWQTF"; the TMDLs will be amended as necessary to reflect Basin Plan amendments that are approved in response to the findings of the Task Force.)

As stated in the response to Comment #5, the proposed implementation plan includes extended compliance schedules to allow for additional data collection, and review and refinement of the TMDLs. In that sense, it is effectively an "interim" implementation plan (recognizing there is no basis in law or regulation for an "interim" implementation plan). Tasks 3, 4, and 5 of the proposed Basin Plan Amendment, as well as the efforts of the SWQSTF, may provide some answers to the questions suggested

by the District. Board Staff believes that to identify bacterial sources, it is necessary to develop and implement a watershed-wide monitoring program (Task 3) and to develop and implement source identification studies (Tasks 4.1 and 5.1). This opinion is confirmed by the comments of Dr. Yates, the scientific peer reviewer (Comments #81, 84 and 86). These investigations can and should be coordinated with the work of the SWQSTF to avoid redundancy. It is not the intent of the proposed implementation plan to require duplication of efforts that are already underway.

Staff believes that it would be appropriate to revise the schedules proposed in the TMDL implementation plan for revisions of the Urban Stormwater Management Plans (Tasks 4.2, 4.3, 4.4, and 4.5) and the agricultural source management plan (Task 5.2) to allow the development of a recommended approach and schedule by the SWQSTF. (This is part of the Phase II workplan of the Task Force). The proposed revisions are shown in the Attachment to Resolution No. R8-2005-0001.

Comment #8:

The costs to achieve the proposed TMDL targets and the relative value of the expected improvements in the attainment of beneficial uses must be fully identified and considered in the issuance of the TMDLs. Section 13000 and 13241 of the California Water Code specifically states that economic considerations must be considered by the Regional Board. The Superior Court of California has ruled that in amending a basin plan to include a TMDL, the same considerations must be made in the proposed TMDL as was in the adoption of the original basin plan.

Consideration of economics, as required by statute, implies quantification of estimated costs for the purpose of evaluating the costs compared to the anticipated benefit from a particular course of action or project.

Irrespective of any mandatory requirements to do so, the citizens of California justifiably expect their public decision-makers to fully assess the costs of proposed programs and requirements and to assess whether the anticipated benefits justify these costs, including cost/benefit analysis. The Staff Report must provide a meaningful and thorough cost/benefit analysis so that the Board can responsibly make informed decisions regarding the proposed TMDL.

Response:

The Superior Court case to which the District refers (City of Arcadia *et al* versus The State Water Resources Control Board and the California Regional Water Quality Control Board, Los Angeles Region) is on appeal. Therefore, it is not binding authority and there is no final judgment.

Section 13241 of the California Water Code (CWC) expressly states that the Regional Board shall consider economics in establishing water quality objectives. As explained in the TMDL Report, no water quality objectives are being established in these proposed TMDLs; the TMDLs are intended to ensure compliance with existing water quality objectives. Section 13241 does not apply to establishing TMDLs, and neither the CWC or the Federal Clean Water Act require that a cost/benefit analysis be conducted as part of the TMDL process. Federal law mandates that TMDLs be set at a level that will ensure attainment of the existing water quality standards (including objectives). The economic feasibility to the dischargers of achieving the standards is therefore neither relevant nor authorized when setting the TMDLs. As part of CEQA compliance, costs of the methods of compliance with the TMDLs must be considered by the Regional Board.

Board Staff notes cost information was presented in the February 3, 2005 TMDL Report. The District and other dischargers have also provided cost information. Staff is not persuaded that the information submitted by the District is an accurate assessment since it does not take into consideration the proposed

compliance schedules. As noted above, staff has considered the likely difficulty, including cost, of meeting the TMDLs in recommending the TMDL compliance schedules.

Comment #9:

[T]he potential costs of compliance with the proposed TMDL are enormous, especially during wet weather conditions. The benefits of attainment of the TMDL during wet and dry weather conditions must be identified and their value compared with the compliance costs.

Response:

Please see response to Comment #8. The cost information provided by the District does not take into account the extended schedules proposed for compliance. The TMDLs proposed in the TMDL Report presented in February 2005 did not distinguish between wet and dry weather compliance. However, changes to the TMDLs and compliance schedules are now proposed to reflect the greater difficulty of wet weather compliance. For the dry season TMDL (April 1 through October 31 of each year), staff proposes a compliance schedule of as soon as possible, but no later than December 31, 2012; for the wet season TMDL (November 1 through March 31 of each year), staff proposes an extended compliance schedule of as soon as possible, but no later than December 31, 2025.

Comment #10:

[T]he Permittees have prepared and included preliminary cost estimates for compliance with current REC-1 standards based on actual implementation costs and studies done elsewhere in California. These preliminary cost estimates should be incorporated into the TMDL Report.

Response:

Staff does not expect to revise the TMDL Report presented at the Regional Board workshop on February 3, 2005. We note that the District did not provide any specific cost information except that which is presented under Comments #26 and 27.

Comment #11:

[T]he TMDL, as proposed, is both technologically and economically infeasible, especially under wet weather conditions. For this reason, it is imperative that the TMDL either be delayed until the SWQTF has completed its efforts or that the implementation plan focus preliminary compliance efforts on supporting the SWQTF efforts.

Response:

Board staff does not believe that the District has demonstrated that compliance with the TMDLs is infeasible for either technological or economic reasons. Again, the District's comments do not reflect the phased nature of the proposed TMDLs, or the extended compliance schedules that will allow the work of the SWQSTF to be completed and the TMDLs to be revised appropriately. The proposed implementation plan includes requirements for monitoring and investigation that are also part of the Task Force workplan. As indicated in the response to Comment #7, the proposed TMDL tasks and the SWQSTF efforts can be seen to be complementary and cooperative.

As discussed in the TMDL Report (Sections 2.5 and 7.3), the Basin Plan fecal coliform objectives upon which the proposed TMDLs are based, do not vary based on the season or the presence of storm flow; the fecal coliform Basin Plan objectives must be met throughout the year. If the SWQSTF identifies recommendations for revision of the REC1 beneficial based on flow conditions or other considerations that result in amendments to the Basin Plan, then Task 6 of the proposed BPA commits the Regional Board to review and revise the TMDLs as appropriate. As indicated in the response to Comment #9,

Board Staff proposes that the TMDLs be modified to address dry weather conditions separately from wet weather conditions.

As discussed above (Comment #7), and as noted in the revised proposed Amendment, Board Staff also recommends that the TMDLs be revised to allow the urban and agricultural dischargers to utilize any information that may come out of the SWQSTF effort to develop a plan and schedule for implementing bacterial reduction strategies.

Comment #12:

[T]he impacts of other activities in the River between outfall locations on bacterial indicator levels are unknown. Examples of sources that may impact bacterial indicator levels include wildlife and transient encampments along the Middle Santa Ana River.

[T]he Permittees are proposing that the implementation plan be modified to include an analysis, possibly including field reconnaissance surveys, to further identify sources, processes and activities in the vicinity of the Santa Ana River in Riverside County that may affect bacterial indicator transport and growth/decay processes.

Response:

Board Staff welcomes the District's suggestion and presumed commitment to undertake the analyses recommended. We believe that these analyses are already included in the proposed implementation plan. Tasks 4.1 and 5.1 of the proposed Basin Plan Amendment (Attachment to Resolution No. R8-2005-2001) require the development and implementation of bacterial indicator source evaluation plans. As stated in the proposed BPA, the plans must include steps to identify specific activities, operations, and processes that contribute bacterial indicators. Board Staff expect that wildlife and transient encampments would be included in this evaluation, as well as performance of various analyses and field surveys. Board Staff do not see any substantive difference between what was proposed in the TMDLs and what the District suggests.

Comment #13:

Data presented within the TMDL Report do not appear to include the full body of available bacterial data within the limits of Reach 3 of the Santa Ana River.

[T]he District has been performing dry and wet weather monitoring of bacterial levels within Reach 3 of the Santa Ana River and at other area outfalls for several years. The use of monitoring and flow data would greatly supplement data that the Board and the USGS are using to develop the TMDL and its model.

The District requests that Regional Board staff determine if other bacteria data is available for use in characterizing the sources and extent of fecal bacteria pollution.

Response:

District staff have attended TMDL workgroup meetings and were active participants in development of the proposed TMDLs. When the TMDL development process was initiated, Board Staff requested that stakeholders provide any data related to the constituents of concern. Therefore, we are disconcerted to learn that District staff apparently made no effort to provide the data that they generated during TMDL development to the TMDL workgroup. However, Board staff appreciates the District's submittal of their data with their TMDL comments. Board staff have evaluated the data, which is discussed in the Response to Comment #14.

Board Staff have already requested data as part of the TMDL development process and regularly requests data biennially as part of its Water Quality Assessment tasks for Clean Water Act, Section 305(b) requirements. If the District is aware of the existence of additional data, Regional Board staff would certainly appreciate receipt of that data.

Comment #14:

Results of the District's wet weather monitoring data from November 2004 along the Santa Ana River upstream of Reach 3 show fecal coliform levels below 200 MPN/100ml indicating that Urban Runoff in Riverside County should not be designated as a significant contributor of fecal coliform bacteria.

The [monitoring data] depict fecal coliform levels from sampling locations at or tributary to the Middle Santa Ana River in Riverside County. Note that 78% of the entire data set are below the 400 MPN/100ml single sample limit proposed by the TMDL.

Response:

Review of the data provided by the District indicates that samples for this monitoring effort were collected intermittently at irregular intervals. As a reminder, the Basin Plan fecal coliform objective is as follows:

Fecal coliform: log mean less than 200 organisms/100ml based on five or more samples per 30-day period, and not more than 10% of the samples exceed 400 organisms/100ml of any 30-day period.

Consequently, the data submitted by the District cannot be evaluated in relation to the logarithmic mean portion of the Regional Board's water quality standard. However, the data can be roughly evaluated in relation to the 10% single sample portion of the standard. This evaluation indicates the following:

- A. There were 28 samples collected at the District's Station 830 between May 5, 2000 and November 10, 2004. This station is located on Santa Ana River – Reach 4 at Pueblo Street, which is approximately ½ mile downstream of the City of San Bernardino, City of Colton RIX facility outfall (21MGD) and approximately 1 mile downstream of the Rialto Channel. The Rialto Channel conveys discharges from the City of Rialto's treatment plant (3 MGD). Two of the 28 samples (7%) exceeded a fecal coliform result of 400 MPN/100ml.
- B. There were 30 samples collected at the District's Station 829 between May 5, 2000 and November 10, 2004. This station is located on the Santa Ana River – Reach 4 at the Market Street overpass, which is approximately 2¼ miles downstream of Station 830. Five of the 30 samples (16.6%) exceeded a fecal coliform result of 400 MPN/100ml.
- C. There were 31 samples collected at the District's Station 754 between March 5, 1996 and November 10, 2004. This station is located on the Santa Ana River – Reach 3 at the River Road overpass, which is several miles downstream of Station 829. Nine of the 31 samples (29%) exceeded a fecal coliform result of 400 MPN/100ml.
- D. There were 6 samples collected at 4 other stations by the District between February 22, 1996 and May 10, 2001. These stations are located on tributaries to Santa Ana River – Reach 3. Five of the 6 samples exceeded a fecal coliform result of 400 MPN/100ml.
- E. Information regarding sampling methods and flow data were not provided.

Results at Stations 829 (Santa Ana River, Market St.), 754 (Santa Ana River, River Rd.), and the four tributary stations violate the Regional Board's water quality standards for REC1 beneficial uses. In fact, these results would meet the State Board's criteria for placing the River on the 303(d) list of impaired waters (see the TMDL Report, Section 5.1). These conditions support Board staff's conclusion that Santa Ana River – Reach 3 is impaired and that urban runoff contributes to the impairment. (Board Staff notes that Stations 829 and 830 are located on Reach 4 of the Santa Ana River, not Reach 3. Therefore, the data from these stations, though valuable, are not applicable when evaluating the status of Santa Ana River, Reach 3. Board Staff would also note that Santa Ana River, Reach 4 is already on the 303(d) list of impaired waterbodies for fecal coliform. The data provided by the District will be useful once the Regional Board initiates work on the Reach 4 TMDL).

Further, Board Staff questions the District's assertion that the data submitted by the District (the other 5 stations (see C and D above)) refutes the position discussed in the TMDL Report that urban runoff is a source of fecal coliform. We see no basis for this assertion. As noted above, five of the six samples at the tributary stations and 29% of the samples at the River Road station exceed the 400MPN/100ml single sample standard, indicating that, if these locations represent urban runoff conditions, they do contain elevated levels of fecal coliform. Staff also points out that the data provided by the District are insufficient to allow comparison with the 30-day logarithmic mean portion of the water quality objective.

Comment #15:

[T]he TMDL Report indicates that the dry weather sources of flow in the Santa Ana River are nuisance urban runoff, rising groundwater, and discharges from Publicly Owned Treatment Works. The District requests that the relative contribution of these sources be quantified for the purposes of the TMDL. In addition, we request that the TMDL Report identify the relative contribution of each of these sources in Riverside, Los Angeles, and San Bernardino Counties.

Response:

Flow data for Santa Ana River – Reach 3, Chino Creek, and Cucamonga Creek, discharge data for POTWs, and estimates of rising water contributions were included in the TMDL Report. In addition, discussions of POTW discharges, rising water, and urban runoff were provided in the TMDL Report. The District suggests that relative contributions from these sources should be included in the TMDL Report but does not indicate why such information should be included. Since the numeric targets, the TMDLs, and the allocations are density-based, and are the same for all dischargers, the relative contributions from the specified discharges and from the specified jurisdictions will not materially affect the TMDLs. The tasks identified by the District could be included in the proposed source evaluations plans that would be required to be submitted (Tasks 4.1 and 5.1 of the proposed implementation plan) and may affect implementation strategies.

Comment #16:

The District states that in a survey conducted by District staff, it found that “virtually no urban runoff is discharged to the Santa Ana River during dry weather.” Further, “[d]uring dry periods, the Santa Ana River flows in Riverside County consist almost entirely of POTW discharges, produced water from the Arlington Desalter and rising groundwater.” And, “bacterial indicator levels in Urban Runoff in Riverside County are low.”

Response:

If, as the District suggests, no urban runoff is discharged to the Santa Ana River during dry weather, then compliance with the urban runoff wasteload allocation during dry weather should be easily feasible. Review of the District's report indicates that some tributaries to the Santa Ana River in the Riverside area conveyed various volumes of urban runoff discharges, while some tributaries were dry at the time of the survey. Board Staff agrees that urban runoff discharges are small relative to most other discharges in the watershed during dry weather conditions. However, in relation to bacterial indicator content, urban runoff discharges are not insignificant. Data generated by the TMDL monitoring program and the District's own monitoring program indicate that urban runoff contains very high densities of bacterial indicators relative to POTW discharges. As a reminder, the TMDL monitoring program was designed and developed to obtain source data for general groups of fecal coliform sources. As discussed at the TMDL Workgroup meetings (at which the District was an active participant), the urban sampling locations were chosen to represent urban sources throughout the entire watershed. Staff recognizes that fecal coliform densities may vary somewhat between all of the urban runoff locations throughout the watershed; however, the Workgroup did not see a need to specifically sample each and every urban runoff location so that distinctions could be made for the Riverside County urban fecal coliform contributions versus the San Bernardino County fecal coliform urban contributions versus the Los Angeles urban fecal coliform contributions. We do believe, however, that this type of county specific assessment is needed, as is currently reflected in the proposed Basin Plan amendment, Task 3 – Monitoring Program. Further, as discussed in Response to Comment #14, bacterial indicator levels in Urban Runoff in Riverside County are, in fact, not low.

Regarding the District's contention that POTWs are a source of fecal coliform during dry weather, as discussed in Section 2.4.1 of the TMDL Report, POTW discharge limits for total coliform are 2.2 MPN/100ml. This is well below the REC1 fecal coliform Basin Plan objective. Fecal coliform may be discharged in POTW effluent whenever there is non-compliance with the total coliform discharge limitations; it is possible, though not documented, that re-growth of these organisms may occur in the River system. Fortunately, violations of the coliform discharge limits are rare (see Table 13 in the TMDL Report). Therefore, staff does not consider POTWs as significant coliform sources.

Comment #17:

[T]he relative proportion of flows from various sources in the Santa Ana River should be incorporated into the analysis of sources and their significance, by stakeholder.

Response:

See Response to Comment #15.

Comment #18:

The sources of bacterial indicators in Urban Runoff primarily reflect a variety of sources not associated with human waste, such as wildlife, soil bacteria and vegetative decay.

POTWs discharge effluent containing bacterial indicators associated with human waste. Although these levels are reduced by disinfection, re-growth of these bacteria indicators and any associated pathogens are of greater public health concern. [T]he POTW dischargers should fully participate in the bacterial indicator TMDL.

Response:

Board Staff agrees that the sources of bacterial indicators in Urban Runoff likely reflect a variety of sources. Additional investigation is required to confirm the District's assertion, and to provide specific evidence concerning the sources. This is addressed in the proposed implementation plan (Tasks 4.1, 5.1).

Regarding POTW discharges, as discussed at length in the TMDL Report, POTWs already have much more stringent discharge requirements than what is proposed for urban and agricultural dischargers in the draft BPA. POTW staff participated in development of the TMDLs and assisted in implementing the TMDL monitoring plan. It is unclear to us in what manner the District believes the POTWs should “fully participate.”

The District states that re-growth of bacterial indicators discharged by POTWs is a greater public health concern. In fact, the District mentioned re-growth as a serious concern several times in its comment letter. POTWs have a discharge limitation for total coliform of 2.2 MPN/100ml. Violations of that limit may result in discharges of fecal coliform, which may re-grow in the aquatic environment, though there is no documentation that this occurs (see Response to Comment #16). Provided that the POTW discharges are in compliance with total fecal coliform limits, it appears highly unlikely that the discharges contribute to observed violations of fecal coliform objectives. If the District’s concerns regarding re-growth of POTW discharge coliform are accepted, a discharge limitation for total coliform of 2.2 MPN/100 ml may not be low enough for any discharges including urban runoff, which are untreated, undisinfected, and contain much higher bacterial indicator densities than POTW discharges. However, we do not believe that this is a reasonable approach. In light of the District’s, and other’s concern for re-growth, and the USEPA’s recommendation for including an explicit margin of safety (see Comment #3), Regional Board staff believe that a more stringent numeric target, TMDLs, and allocations are warranted to account for this uncertainty (see Attachment to Resolution No. R8-2005-0001).

Comment #19:

[T]he Staff Report incorrectly concludes that open space and wilderness areas are not significant sources of fecal coliform under dry weather conditions. [S]amples were collected only during dry weather. The lack of significant bacterial indicator densities during dry weather, when overland flows would be essentially nonexistent, does not indicate that Natural/Open Space land uses are not a significant source. Should wet-weather monitoring indicate elevated bacterial indicator densities, the stakeholders responsible for Natural/Open space land uses should determine the sources and propose management plans as appropriate.

Response:

As stated in the District’s comment, during implementation of the TMDL monitoring program, water quality samples were collected at the open space locations only during dry weather conditions. No precipitation occurred on those days when samples were collected. The monitoring results revealed very low densities of bacterial indicators at the open space locations for 42 out of 43 data points at one location (one exceedance of the Basin Plan fecal coliform objective) and 43 out of 43* data points at the other open space/natural location (no exceedances of the Basin Plan fecal coliform objective). Therefore, the TMDL Report correctly concludes that open space and wilderness areas are not significant sources of fecal coliform under dry weather conditions.

The TMDL Report states that open space land uses may be a source of bacterial indicators during wet weather conditions. Because of this possibility, Task 3 of the proposed BPA requires that the US Forest Service participate in development and implementation of the watershed-wide monitoring program,

* In reviewing the TMDL monitoring data, Board staff realized a mistake had been made regarding the total number of samples at the open space monitoring locations. A total of 43 samples were collected at each location. In the TMDL Report, Board staff reported that 44 samples had been collected at open space sampling location M1 on Cucamonga Creek.

which includes wet weather monitoring. We believe that this is consistent with the District's recommendation.

Comment #20:

[O]pen space samples were collected in the mountains outside of the study area. The flows represent snowmelt, rising groundwater and springs — flows that are not impacted by non-anthropogenic sources of background contamination including wildlife and decaying organic matter that would be expected to affect the levels of bacterial indicators found in the Santa Ana River.

Response:

The District is incorrect. The locations where the open space samples were collected are within the Middle Santa Ana River watershed. Board Staff notes that the District helped design the TMDL monitoring program. The District did not identify this concern either during the development of the monitoring program or when it was underway.

Further, staff notes that the District did not provide any information to support its contention regarding the effects of non-anthropogenic sources on water quality. The effects of non-anthropogenic bacterial indicator sources on water quality during dry weather conditions may be a worthy subject of study. If the District wants to propose these studies as part of their TMDL implementation program, staff would support that proposal.

Comment #21:

To be truly representative, background open space runoff samples should be collected in the Middle Santa Ana River Watershed as close as possible to the areas where river samples are collected.

Response:

Please see response to Comment #20.

Regional Board staff has proposed monitoring locations for use in implementing the watershed-wide monitoring program as described in Task 3 of the proposed BPA. Regional Board staff are willing to consider alternative open space/natural locations to those which were proposed; however, the District did not suggest any specific alternative locations at this time.

Comment #22:

[O]pen space areas are home to many animal species and are considered an important stopover point for many species of migratory birds. It is entirely possible that animals that live in, or traverse through, the Santa Ana River contribute significant portions of dry weather bacterial indicator levels in the River.

Response:

Board staff does not disagree with this comment. The proposed implementation plan requires responsible parties to develop and implement source evaluation plans. Board staff expect that these source evaluations will investigate the possibility of contributions from various animal species. Board staff notes that the existing Basin Plan fecal coliform objectives do not distinguish human related fecal coliform sources from wildlife fecal coliform sources.

Comment #23:

The effectiveness of the identified control measures [in the TMDL Report] in addressing bacterial levels is highly questionable. Wetlands have shown mixed results in reducing bacterial indicators from runoff, and in some cases, have increased bacterial indicator loading due to inputs from birds and other wildlife.

Response:

The District describes and comments on surface wetlands. However, the type of wetlands discussed in the TMDL Report is subsurface wetlands, which are different from typical surface wetlands. As stated in the TMDL report:

“Subsurface wetlands have been known to reduce levels of nutrients, pathogens, and suspended solids. Subsurface wetlands are basin type structures that could be constructed adjacent to, or even within, streams, channels, or flood control structures. Wetland plants are placed in gravel layers within the wetland basins. Water from the subject waterbody is directed through the gravel layers. Constituents of concern are taken up through plant roots or used as a food source for beneficial microbes, which coat the gravel particle surfaces. The water level within the basin never rises above the top surface of the gravel layers. These facilities can provide some habitat for smaller animals and birds.” (page 89 of 143).

The extended compliance schedules proposed in the TMDLs provide time to evaluate source and treatment controls necessary to achieve compliance.

Comment #24:

The District is not aware of any studies that have shown that street sweeping or creek clean up programs are effective in controlling bacterial growth. A determination of the projected effectiveness of these and other proposed control measures in meeting the bacterial indicator objective must also be provided.

Response:

The proposed TMDLs include extended compliance schedules designed, in part, to determine the most effective BMPs, or combination of BMPs, needed to achieve compliance. As part of Tasks 4.2, 4.3, 4.4, 4.5, and 5.2 of the proposed BPA, it is expected that more thorough evaluations of the effectiveness of possible management practices will be performed.

Comment #25:

Short of disinfection, the District is not aware of any stormwater treatment BMPs that have achieved high levels of effectiveness in removing coliform bacteria. To treat fecal coliform, an active treatment system [disinfection by chlorine, ozone or UV light, or diversion to a treatment facility] would need to be employed. Re-growth would be expected even if treatment were provided.

Response:

Tasks 4.1 and 5.1 of the proposed Basin Plan Amendment (Attachment A) require the development and implementation of bacterial indicator source evaluation plans. As stated in the proposed BPA, the plans must include steps to identify specific activities, operations, and processes that contribute bacterial indicators. Once specific bacterial indicator sources are identified, appropriate management measures for controlling or reducing bacterial indicators can be better evaluated as required in Tasks 4.2, 4.3, 4.4, 4.5, and 5.2 of the proposed BPA.

Comment #26:

Treatment of wet weather flow is not feasible due to economic and technological limitations of current technologies.

The City of Huntington Beach had investigated treating dry weather flow using UV light disinfection. The City estimated a capital cost of \$131,300 for this system. To transfer this facility to the Santa Ana River – Reach 3 would require that flood waters be dammed and released at the treatment capacity of the facility (200gpm). Peak wet weather flow at the MWD Crossing of the Santa Ana River was 31,300 cfs

(total storm volume was 214,400 ac-ft) in February 1998. Although this is not the wettest year on record, it is an example of a typical wet weather event. It would take the construction of at least two dams with equivalent storage capacity as Seven Oaks Dam (145,000 AF) and approximately 740 years of detention to treat this flow with UV light disinfection in a facility of comparable size to that proposed by the City of Huntington Beach (capacity 200 gpm). Furthermore, the capital cost in building a string of facilities, total capacity to treat 31,300 cfs, along Santa Ana River – Reach 3 could cost \$15 billion. It should be noted that the estimated 100-year flow rate of the Santa Ana River is 144,000 cfs, or approximately five times the peak flow rate of the 1998 event, indicating that wet weather treatment costs could exceed \$60 billion. Although urban discharges within Riverside County are minimal during dry weather, the proposed TMDL could ultimately trigger a requirement to treat dry weather flows with UV disinfection. This could potentially be costly as Permittees may be required to treat via UV disinfection at their numerous outfalls to the Middle Santa Ana River and its tributaries.

Response:

Board staff agrees that attempting to achieve TMDL compliance using the approach described by the District (treating huge amounts of polluted rainfall runoff) would be difficult and costly. However, Board Staff have not prescribed the use of UV treatment or any other methods for achieving compliance. Board staff believes that once specific bacterial sources are determined, the District may find that other more appropriate and cost-effective compliance methods exist that will enable them to achieve compliance with the TMDLs, including source control. Therefore, the proposed source identification tasks are critical to development of appropriate BMPs and actual cost information

Comment #27:

The cost estimates provided for implementation of source control measures are grossly underestimated and misleading. The estimates provided in the Staff Report for subsurface wetlands and runoff diversion and treatment are for implementation of single facilities that would provide treatment for a tiny area of the watershed. To fully address all sources, scores of such facilities costing many millions of dollars may be required. An estimate of the number of such devices and their full cost of implementation in the watershed must be provided to fully assess the cost/benefit.

Response:

Please see Responses to Comments #8, 23, 25, 26 and 61.

Comment #28:

The problem statement [in the TMDL Report] regarding elevated indicator bacteria levels is largely based on storm event data.

Response:

The problem statement is a required portion of a TMDL Report and is a description of the reasons for placing a waterbody on the 303(d) list. Data generated as part of the TMDL development process were collected during dry weather conditions and indicate impaired water quality in the listed waterbodies, thus supporting the original listings based on storm event data.

Comment #29:

During storm events, elevated levels of indicator bacteria are of little real concern and due to the enormous volumes of water involved, are not amenable to any source or treatment control measures. Although indicator bacteria objectives may be exceeded in storm flows, there is no beneficial use to be protected to warrant imposition of a TMDL. Therefore, the District requests that the TMDL during these conditions only apply to non-storm periods.

Response:

Section 2.5 of the TMDL Report notes that REC1 water quality objectives in the Basin Plan apply to inland surface waters within the Region throughout the year. The Basin Plan does not distinguish fecal coliform objectives based on season, the presence of storm flows, or other waterbody characteristics that may affect actual recreational uses of the waterbodies. Consequently, the TMDLs must assure that the REC1 objectives are achieved year-round, irrespective of the circumstances. The District is a member of the Stormwater Quality Standards Task Force and is thus aware that a wet weather/high flow suspension of REC1 uses and objectives is being considered. When (and if) this or other relevant changes to the REC1 objectives are incorporated in the Basin Plan, then the TMDLs would be revised accordingly. As stated above, Task 6 of the proposed Basin Plan Amendment commits the Regional Board to review and revise the TMDL every three years, or more frequently if warranted by the results of monitoring and/or other relevant studies (including the efforts of the SWQTF).

Comment #30:

It is noteworthy that the [TMDL] monitoring data for the Hamner Avenue station does not support the Listing Policy Criteria.

Response:

We are unclear on the point that the District is making in this comment. It is true that comparing that 10% single-sample portion of the water quality objective to the Listing Policy, the fecal coliform data for the Santa Ana River at Hamner Avenue does not equal or exceed the listing criteria. However, the remaining sampling locations on the Santa Ana River, including MWD Crossing and Prado Dam do equal or exceed the listing criteria.

Comment #31:

Due to the significant differences in wet and dry weather conditions and potential source contributions to indicator bacteria levels, the TMDLs should separately address these climatic conditions.

Response:

Board Staff agree that it is appropriate to separate wet weather discharges from dry weather discharges. Therefore, as shown in Attachment to Resolution No. R8-2005-0001, dry season TMDLs, WLAs, and LAs for fecal coliform and *E. coli*, as well wet season (essentially, all weather conditions) TMDLs, WLAs, and LAs for fecal coliform and *E. coli* are now proposed. Board staff believes that compliance with the dry condition TMDLs can and should be achieved by December 31, 2012. Given that control of wet weather discharges is likely to require significant costs and/or innovative control measures, Board Staff propose that the wet season TMDLs be achieved no later than December 31, 2025. Since the Basin Plan makes no distinctions based on season, climate, the presence of storm flows, or other waterbody conditions that may affect actual recreational uses, Board Staff believes that taking this approach will assure that the REC1 objectives are achieved year-round. Further, this allows sufficient time for the effort of the SWQSTF to be completed.

Comment #32:

Re: Environmental Checklist

I.e. Existing runoff control requirements are contributing to the exodus of the dairy industry from the Chino Basin. The imposition of additional control requirements as proposed in the Staff Report may add to this condition.

Response:

We presume that the District's intended reference is to II.c of the checklist, which involves the conversion of farmland to non-agricultural uses. The District does not present any evidence or data to support the

assertion that runoff control requirements are or will contribute to the exodus of the dairy industry. High land prices, manure disposal challenges and the necessity and cost of importing feed are the more likely candidates.

Comment #33

Additional comments on Environmental Checklist:

- IV.b Compliance with the proposed TMDL may result in infiltration, diversion of low flows from natural drainages to the sanitary sewer system and other actions to eliminate or significantly reduce non-storm flows. This may result in an adverse impact on riparian habitat and federally protected wetlands reliant on these flows.
- VIII.f Compliance with the proposed TMDL may substantially degrade water quality by diversion or reduction of flows.
- XVI.b Diversion of low flows to the sanitary sewer system as proposed in the Staff Report may result in the need to construct new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- XVI.c Requirements to treat Urban Runoff to comply with the TMDL may require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- XVII.a Compliance with the proposed TMDL through the reduction, elimination or diversion of low flows of Urban Runoff has the potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal.
- XVII.b Compliance with the proposed TMDL through the reduction, elimination or diversion of Urban Runoff throughout the 488 square miles of the Middle Santa Ana River Watershed may result in impacts that are individually limited, but cumulatively considerable.
- XVII.c Compliance with the proposed TMDL through the reduction, elimination, diversion or treatment or Urban Runoff may result in environmental effects that may cause substantial effects on human beings, either directly or indirectly.

Response:

Staff agree that there may be potential impacts to biological resources, hydrology and water quality, and utility and service systems from the implementation of projects or BMPs and have revised the Environmental Checklist accordingly. Staff does not agree that there may be impacts to humans from the proposed amendment (XVII.c). It is important to keep in mind that the Discussion of Environmental Impacts attached to the Environmental Checklist notes that the adoption of the Basin Plan amendment will not result in any direct environmental impacts. It also includes the explicit recognition that implementation of actions necessary to implement the TMDLs may affect the environment. However, any such potential adverse environmental effects will be subject to project-specific CEQA analysis and certification to assure appropriate avoidance/minimization and mitigation of such impacts.

Comment #34:

The discussion of the hydrology of the Santa Ana River should identify the annual average number of days of contiguous flow from Prado Dam to the Pacific Ocean.

Response:

The District does not explain why this information should be included. The flow of water in the area specified by the District is outside of the subject watershed and is extraneous information.

Comment #35:

The title and discussion of Section 2.4.1 are misleading. The water discharged from the POTWs is not “recycled” as this suggests an intentional reuse. Although treated to meet discharge requirements, the discharge is effluent and should be described as such in the title and discussion. In addition, the discussion should note that growth and re-growth of indicator bacteria may occur downstream of these discharges, and this is currently being investigated.

Response:

Comment noted. As previously stated (see Response to Comment #1), the TMDL Report will not be revised. A separate report will be prepared to describe the proposed changes to the Basin Plan amendment based on consideration of comments received.

Comment #36:

Discharges of Urban Runoff from the Riverside County MS4 during dry weather are almost non-existent and monitoring has shown low levels of indicator bacteria.

Response:

Provided that the District’s assertion is correct, then compliance with the proposed dry season WLA for urban runoff should be easily feasible. Regional Board staff presented an evaluation of the District’s data in response to Comment #14. These data suggest that there are discharges of bacterial indicators in urban runoff from Riverside County MS4 during dry weather. The source investigations required by the proposed implementation plan will address these divergent views.

Comment #37:

Produced water from the Arlington Desalter is a significant component of the flow in the Santa Ana River. In addition, water deliveries from intra-basin transfers and imported water, as well as dewatering discharges permitted by the Regional Board also add to the overall flow.

Response:

Comment noted.

Comment #38:

Table 14 of the Staff Report proposes a limit of “400 organisms/10ml for any 30-day period” in not more than 10% of samples. This appears to be a typographical error.

Response:

Yes, this is a typographical error. The correct statement should be “400 organisms/100ml for any 30-day period.”

Comment #39:

Table 14 (Staff Report) and Table 5–9x (Attachment A) propose that 5 samples per 30–day period be collected to monitor fecal bacterial levels in the Middle Santa Ana River. Simple arithmetic calculates that 1 sample out of 5 is equal to 20%; thus, achieving 10% compliance among 5 samples would be impossible. The District recommends changing the percentage 10% to 20% in any 30–day 5–sample set.

Response:

The REC1 water quality objective states that no more than 10% of samples shall exceed 400 organisms/100ml for any 30–day period. Dischargers are not limited to the collection of a maximum of 5 samples per 30–day period; more than 5 samples may be collected during a 30–day monitoring period. However, to achieve and maintain compliance, no more than 10% of the number of samples can exceed the specified density.

Comment #40

Table 5–9y (Attachment A) provides agricultural dischargers six months to develop and implement a bacterial indicator source evaluation plan, while urban dischargers are provided only three months to develop their plans. The water quality monitoring plan also has a three–month compliance date. These dates are insufficient. The District recommends at least 18 months after adoption of the basin plan amendment for all stakeholders to allow for coordination, budgeting, and development of the requisite programs.

Response:

Board Staff believes that 18 months is not needed to develop a proposed monitoring program. However, it is appropriate to revise the recommended BPA to specify that urban dischargers also be given six months to develop and implement a bacterial source evaluation plan (see Attachment to Resolution No. R8-2005-0001).

Comment #41:

Monitoring cost estimates need to include staff time, including possible overtime, if samples are to be collected outside of normal working hours, equipment such as vehicles, data quality control and interpretation, and report preparation.

Response:

Comment noted. If the District provides additional cost estimates for conducting monitoring that information will be provided to the Regional Board for their information and consideration.

Board Staff also notes that the Regional Board has afforded the District an opportunity to participate in regional TMDL monitoring programs in lieu of conducting compliance monitoring pursuant to the MS4 permit. Board Staff expects to continue to utilize this flexibility in monitoring program requirements to ensure that monitoring programs are coordinated and resulting costs are minimized. To that end, the cost savings associated with the reduction of MS4 monitoring should also be made available for Regional Board consideration.

Comment #42:

The Staff Report notes that a Proposition 13 grant was awarded to SAWPA to work with the USGS in developing the Phase II TMDL Monitoring and Modeling Program. The Staff Report should identify how much funding was awarded, and if this grant will address Urban and Agricultural stakeholder bacterial source assessment tasks specified in the Implementation Plan.

Response:

As previously stated (see responses to Comments #1, 10, 35, 53 and 71), there is no intent to review and/or revise the TMDL Report. The District requests that additional information be provided, but does not indicate why the additional information should be included. The specified Proposition 13 grant project has been discussed in depth at several TMDL workgroup meetings, which District staff attended. USGS staff participated in several of those meetings. Written background information regarding project funds, and the scope of work for the project were distributed. Board Staff will be pleased to share this information again with the District.

Comment #43

Section 11.4 should include details or references to the comparable Proposition 13 projects referenced. Supporting data should include the location and specific purposes of the grants, and details such as the size of the watershed analyzed, the type and extent of land uses present, and the number of monitoring stations used to support the analysis.

Response:

Again, there is no apparent need or intent to revise the TMDL Report. As a matter of information, Board Staff received two Proposition 13 concept proposals in 2003, focused on evaluating and implementing BMPs in the San Jacinto watershed. The San Jacinto Watershed covers approximately 780 square miles. Regarding land use in San Jacinto, 1993 SCAG data indicate that approximately 66% is vacant, 18% is agricultural, and the remaining 16% is military and mixed urban. SAWPA proposed one of the projects, while staff at UC Riverside proposed the other.

SAWPA's project was focused on supporting TMDL development for Canyon Lake and Lake Elsinore. BMPs would be evaluated and developed to reduce nutrient and pathogen loads to the lakes. Potential BMPs included riparian habitat, riparian buffers for agriculture, and other control measures for dairy operations. Significant portions of proposed project funds were to be used for BMP design and construction.

UC Riverside's project focused on developing and implementing BMPs in support of TMDLs to reduce nutrient loads from croplands to Canyon Lake and Lake Elsinore. Potential BMPs included buffering zones, modified manure application methods, modified fertilizer and manure application rates and timing, turf grass management, and crop rotation. Tasks also included refining modeling efforts and conducting outreach.

Both projects proposed monitoring programs as part of the project, however, specific numbers and locations of monitoring stations were not included.

Comment #44:

The District recommends the Regional Board modify Task 3 in Attachment A consistent with the District's comments on Page 3 of their letter. The minimum specifications for the proposed monitoring program should be eliminated to allow stakeholders to consider an alternative Regional Monitoring Plan.

Response:

The minimum list of sampling locations and sampling parameters specified in the draft Basin Plan Amendment/TMDL, Task 3 are, in Board Staff's opinion, necessary for evaluating and tracking compliance with the TMDLs, WLAs, and LAs. Nonetheless, if the District or other responsible parties choose to propose alternative sampling locations, Board Staff is willing to consider any such proposal provided that adequate rationale is provided. Task 3 of the TMDL already includes language reflecting

this flexibility to specify alternative sampling locations. Therefore, no changes to the TMDLs are proposed in response to this comment.

Comment #45 (page 14):

The TMDL Report is insufficient to support the adoption of a bacterial indicator TMDL for the Middle Santa Ana River. Feasible treatment controls needed to attain the TMDL during wet weather do not exist. An interim TMDL limited to dry weather conditions should be developed focusing on more appropriate bacterial indicators, evaluating information regarding sources and bacterial indicator transport and re-growth, and continued implementation of public education, pet waste management, and other ongoing programs to control bacterial indicator sources.

Response:

The District does not state why the TMDL Report is insufficient to support the adoption of a TMDL. All required and applicable elements for this TMDL are included in the Report. That said, it is recognized that there is uncertainty caused in large part by data limitations, particularly for wet weather, and the lack of understanding of die-off and re-growth processes in the affected receiving waters. The TMDL Report points out (p. 120 of 143) that the collection of additional data is critical to developing long-term solutions for bacterial indicator control. The extended compliance schedules and the proposed requirements for the submittal of plans to implement the TMDLs take into consideration the need to develop and implement effective short-term solutions, as well as allow for the development of long-term solutions once additional data have been collected.

As discussed in the Response to Comment #31, Board staff now proposes both dry season and wet season TMDLs and appropriate compliance schedules.

Regarding treatment controls, while the District has provided some information regarding the feasibility of certain treatment controls, it did not provide a reasonable evaluation of all potential management measures for achieving compliance with the TMDL.

The District suggests that information regarding sources and bacterial indicator transport and re-growth be evaluated. This is consistent with the proposed requirements of Tasks 4.1 and 5.1 of the proposed BPA. Board staff propose that plans for evaluating specific activities, operations, and processes that contribute bacterial indicators be developed and implemented by dischargers. Board staff expect that these activities will include bacterial indicator transport and re-growth evaluations. Further, Board staff have accounted for the possibility of re-growth in the Margin of Safety as described in Response to Comment #3.

The District suggests that the TMDLs include continued implementation of public education, pet waste management, and other ongoing programs to control bacterial indicator sources. Again, Board Staff agree and believe that this suggestion is consistent with the proposed requirements of Tasks 4.2, 4.3, 4.4, 4.5, and 5.2 of the proposed BPA. In these tasks, Board Staff proposes that plans for achieving compliance with load allocations be developed and implemented. These plans can include and describe those measures currently in place that may contribute to controlling bacterial indicator sources, however, Board staff believe that additional control measures are needed to achieve compliance with the proposed TMDLs.

Comment #46:

In allocating funding responsibilities for TMDL related activities, all potential dischargers, including the POTW operators and sanitary sewer operators, Los Angeles County MS4 Permittees, Phase II Permittees, State and Federal agencies must be required to participate to the proportion of their relative contribution.

Response:

The proposed TMDLs do not allocate funding responsibilities. Rather, the TMDLs identify the significant sources of bacteria and establish wasteload and load allocations for these sources, as required. Each of these sources will be responsible to achieve their respective allocations.

The District recommends that Phase II Permittees be included in the TMDLs. As indicated in the Response to Comment #4, Board staff agrees with the need to address the Phase II MS4 dischargers. The Phase II MS4 Permittees in the Santa Ana Region are not currently listed as part of the State Water Resources Control Board General Permit for the Phase II MS4 discharges (Order No. 2003-0005-DWQ). Therefore, Board Staff believes that if through the watershed monitoring program and source identification studies, the Phase II MS4 discharges are found to be causing or contributing to violations of the water quality objectives, then the Regional Board will take the appropriate regulatory steps to address those discharges. Board Staff is proposing that language to this effect be included in the Basin Plan Amendment (see Attachment to Resolution No. R8-2005-0001).

In Tasks 3 and 4 of the proposed BPA, Board Staff included the cities of Claremont and Pomona as agencies responsible for participating in and completing the specified tasks. These are the only Los Angeles County Permittees that are tributary to the MSAR watershed. Board Staff have contacted staff at the Los Angeles Regional Board regarding this issue and expect to develop an appropriate mechanism to ensure that those Los Angeles County areas comply with the TMDLs.

The District did not specify which State and Federal agencies should be included. In Task 3 of the proposed implementation plan, Regional Board staff proposes that the US Forest Service participate in development and implementation of the Watershed-Wide Monitoring Program. Results of the TMDL monitoring program to date indicated that the open space areas managed by the US Forest Service were not sources of bacterial indicators, at least during the monitoring period. However, if results of the Watershed-Wide Monitoring Program indicate different conditions, Task 6 of the proposed BPA commits the Regional Board to review the BPA as warranted by such results. If the District has information or concerns regarding other State and Federal agencies, it should provide detailed information or concerns about specific agencies.

Comment #47:

The WDRs for the LA County MS4 Permittees, Caltrans, all Phase II Permittees in the Middle Santa Ana River Watershed, sanitary sewer system operators and others should be revised to address compliance with the proposed TMDL.

Response:

Please see response to Comment #46.

Comment #48:

Soil, wildlife, and transient encampments may contribute to exceedances of bacterial indicators. The monitoring and treatment and source control costs associated with these sources should be allocated to the State and identified in the Regional Board's annual budget requests.

Response:

The Regional Board does not have the land use authority necessary to address transient encampments. To the extent that source investigations completed by the responsible parties, as required by the proposed implementation plan, demonstrate that soil and /or wildlife are bacterial contributors, then revisions to the TMDL to reflect natural source inputs may be appropriate.

PATRICK J. MEAD

**San Bernardino County Flood Control District
(letter dated March 17, 2005)**

Comment #49:

The overall environmental system, including the sources, transport, and transformations of bacterial indicators in the Santa Ana River (SAR) watershed, is not fully understood. Other research efforts are working to identify sources, evaluate pathogen indicators in sediment, and understand the overall behavior of indicators in watersheds under various conditions. The results of these studies should be considered in the development of compliance standards and the implementation plan for this TMDL.

Response:

Board Staff agree that the environmental system in the Middle Santa Ana River watershed is not fully understood and recognizes that much work is underway statewide to evaluate bacterial indicators, sources, etc. Consequently, Board Staff have proposed Tasks 3, 4 and 5 in the proposed implementation plan, as well as extended TMDL compliance schedules, to allow for future refinement of the TMDLs, WLAs and LAs based on these and other investigations. This includes the work of the Stormwater Quality Standards Task Force (see Response to Comment #7).

Comment #50:

The TMDL Report describes sampling locations and laboratory results, it does not provide any information about the assumptions underlying data collection, site selection, data evaluation or conclusions. The TMDL Report should list all of the assumptions involved, and evaluate how they impact the inferences or conclusions presented. There are uncertainties in the data and evaluations that are not adequately described. One mechanism for describing assumptions and uncertainties would be to provide a much more complete description of sampling methodologies and site selection criteria, e.g., were all of the data from grab samples? This is not clearly described.

Response:

Board Staff points out that District staff attended TMDL Workgroup meetings, and participated in all phases of the development and implementation of the TMDL monitoring program. The detailed information requested by the District was discussed in depth at TMDL Workgroup meetings. Board Staff believes that the rationale for site selection is adequately discussed in the TMDL Report.

Comment #51:

The TMDL Report does not adequately address fecal contamination from agriculture and from dairies, in particular.

Although the “dairy permit” prohibits discharges from dairies unless generated from rainfall in excess of the 25-year, 24-hour storm, the District and other Permittees have documented repeated unauthorized discharges from dairies in the watershed for over ten years. During the most recent rain events, numerous polluted discharges were observed, even though the 25-year storm threshold was not exceeded.

Although the dairy permit has been in place for over five years, we have documented that numerous dairies have been repeatedly out of compliance. The District and other Permittees have reported these discharges to the Regional Board, but it appears that little has changed in the way these facilities operate. Therefore, we contend that the dairy permit has not been effective, and that the first priority for this TMDL should be to bring these facilities into compliance, and then reassess the level of impairment in the affected reaches.

Response:

The proposed TMDLs rely on available data that show that both dairy discharges and urban runoff are significant sources of fecal coliform. The proposed TMDLs include the same wasteload allocations for both types of sources. The TMDL Report acknowledges the limitations of the data and the proposed TMDL implementation plan includes tasks intended to address this problem. These include specific source identification investigations by both urban and agricultural stakeholders. Also included is a task directed to agricultural owner and operators, including dairy owners/operators, to develop and implement a program to address bacterial discharges.

There has been substantial progress by the dairy operators in submitting and implementing Engineered Waste Management Plans, as required by the dairy permit. However, compliance with the permit is problematic unless and until stormwater facilities that protect the dairies from inundation by runoff from upstream urban areas are in place. The District, with the Riverside County Flood Control District, committed about five years ago to the construction of needed facilities. The storm drain facilities along Riverside Drive in Ontario were completed in spring 2004. The County Line Channel has not yet been completed. Completion of these stormwater facilities should have a high priority. Board Staff is aware that unauthorized dairy discharges also occur in the dry season. Staff have issued 114 Notices of Violation and 8 Administrative Civil Liability Complaints over the last five years. Staff will continue to follow-up on unauthorized discharges, and welcomes reports of these discharges. Where these reports are accompanied by relevant surface water monitoring data, it would be particularly helpful to assess TMDL compliance and/or the need to revise the TMDLs.

Comment #52:

We understand the POTWs are required to monitor their effluent, and that most of the time, their monitored effluent meets permit requirements. However, we disagree with conclusion 4 in Section 5.5. As stated in the TMDL Report, POTWs do have exceedances of their limits and are a source of pathogen indicators. Additional monitoring and evaluation are warranted to more accurately characterize the magnitude and impact of these exceedances.

Response:

Please see the response to Comments #15, 16 and 18. It is acknowledged that fecal coliform may be present in POTW discharges that violate total coliform permit limits, and that these coliform may re-grow in the environment, although there is no relevant documentation of such an effect. Fortunately, instances violations of the total coliform discharge limit are rare. As stated in the TMDL Report, there were two violations of discharge limitations by POTWs during implementation of the TMDL Monitoring Program. The effect of these violations on the TMDL monitoring results was indeterminate. However, results of TMDL monitoring as a whole indicate that the listed waterbodies are impaired regardless of the POTW discharges. As such, the focus of TMDL implementation is properly placed on the significant sources.

The District suggests that additional monitoring and evaluation of POTW discharges is warranted. POTW dischargers collect water samples on a daily basis and have the samples tested for total coliform. If the proposed use of *E. coli* as the basis of alternative numeric targets is approved, it will be appropriate to revise the monitoring requirements to include testing for *E. coli* as well. Source investigations required as part of the proposed implementation plan may result in recommendations for additional monitoring of POTW discharges where there is evidence that violations/re-growth contribute to bacterial impairment.

Comment #53:

Several recent and ongoing studies have provided strong evidence that bacterial indicators survive and reproduce in the environment.

The background research in the TMDL Report is inadequate and should be updated with all relevant study results, especially those from the southern California region.

We believe that the current scientific consensus is that re-growth in the environment definitely occurs, and should be accounted for in the TMDL allocations. Further, bacterial behavior, including various sources and regrowth in the environment, must be understood if the TMDL is to succeed.

Response:

See Responses to Comments #3, 7, 18, 45, 79, 80 and 81.

Comment #54:

Pathogens from natural sources are not adequately characterized in the TMDL Report.

Natural samples occasionally produce surprisingly high indicator densities. Urban Stormwater Management programs should not be required to control these sources. If these natural sources are re-growing in the environment, how will the TMDL account for this?

Response:

Board Staff agree that open space/natural land uses have not been fully characterized in relation to bacterial indicators. Task 3 of the proposed BPA includes additional monitoring tasks for open space/natural land use areas.

Board Staff agree that water quality samples representing open space/natural land use areas may occasionally contain high densities of bacterial indicators. However, Board Staff believe that results of the TMDL monitoring program indicate that open space/natural land use areas are not significant sources of bacterial indicators, at least during dry weather conditions.

Regardless of bacterial indicator conditions in open space/natural land use areas, Board Staff have not proposed that Urban Stormwater Management programs control bacterial indicator sources in these areas. The US Forest Service has been identified in Task 3, and must comply with the proposed load allocation and monitoring program requirements. As indicated in Basin Plan amendment Task 6, Board Staff will evaluate results of water quality monitoring, and make adjustments to the TMDLs, WLAs and LAs as appropriate.

See also Response to Comment #80.

Comment #55:

Dry and wet weather conditions should be evaluated separately with regard to data collection, the appropriateness of the WQOs, and the economic evaluation. The cost of BMPs necessary to treat storm runoff were not included in the cost evaluation, even though the TMDL Report states that the TMDL applies to both storm and non-storm flows.

Response:

See Response to Comments #9 and #26.

Comment #56:

The TMDL Report should more explicitly anticipate the expected revisions to the WQOs and bacterial indicators that are likely to be adopted in the near future (*E. coli* and/or enterococci) based on recommendations from the USEPA.

The TMDL Report should state a clear intent to reopen the TMDL to incorporate these new indicators, and provide a discussion of how the implementation plan would be impacted. It might even be appropriate to consider the present Basin Plan WQO for fecal coliform to be an *interim* WQO. The objective here is to minimize duplication of effort.

Response:

As stated in the Response to Comment #1, no revisions to the TMDL Report are proposed. Appropriate changes to the TMDLs based on consideration of comments will be included in the Basin Plan amendment proposed for Regional Board consideration, and will be described in the staff report for the second public workshop (scheduled for June 34, 2005). Please see the Response to Comment #2 regarding alternative indicators. The proposed implementation plan includes the commitment by the Regional Board to review and revise the TMDLs as necessary based on new information. This effectively serves as the “re-opener clause”.

The existing Basin Plan objectives for fecal coliform are existing objectives and therefore cannot be designated as interim objectives.

Comment #57:

Additional sources of pathogens may exist at facilities under the General Industrial Stormwater Permit. These facilities should be required to test their discharges for bacterial indicators and implement BMPs. We recommend that this be added as an action item under Task 1.

Response:

Where there is evidence that there is reasonable potential for industrial discharges to have fecal coliform or other bacterial indicators (e.g., *E. coli*) that would cause or contribute to violations of objectives, then those parties responsible for those discharges can be required to conduct appropriate monitoring. Further, if the results of the bacterial indicator monitoring program and/or source evaluation investigations indicate that industrial dischargers are contributing to exceedances from the MS4 system, those specific discharges can be addressed through the appropriate regulatory mechanisms.

Comment #58:

Task 2 requires the Regional Board to develop a list of agricultural operators.

We suggest that they should have already been identified and should have been brought into the work group early on.

We urge the Regional Board to undertake Task 2 immediately, rather than wait for TMDL adoption.

Response:

Comment noted.

Comment #59:

The Chino Basin Pathogen TMDL Phase II Monitoring and Modeling Program should be much more thoroughly explained. How will the results of this modeling be used in the implementation plan? Will compliance be assessed with the model? We request that the TMDL Report be revised to include a thorough description of the Phase II Program and how it will be used, including any anticipated costs for the dischargers, or implications for the monitoring program. Is the Phase II Program a separate source evaluation program?

Response:

Please see Response to Comment #42. The San Bernardino County Flood Control District, like the Riverside County Flood Control and Water Conservation District, was a participant in TMDL workgroup meetings at which details regarding the Phase II Monitoring and Modeling Program were discussed. Again, no changes to the TMDL Report are proposed.

Comment #60:

The TMDL Report does not evaluate the potential environmental impacts of extensive BMP implementation actions that will be triggered by the TMDL. The CEQA checklist should be revised to include these potential impacts. A more accurate response for Question XVII.b would be “potentially significant impact.” An evaluation should be made to determine whether the actions necessary to meet the relevant WQOs would cause more environmental harm than would be justified by the attainment of WQOs.

Response:

Please see Response to Comment #33. Since the actions that will be required to meet the relevant water quality objectives have yet to be defined based on more intensive source investigations required in the TMDL implementation plan, it is infeasible to perform the evaluation recommended by the District. Each of these actions will be subject to specific CEQA review, at which time the environmental effects of implementation must be considered and weighed.

Comment #61:

The cost evaluation is not specific enough to allow a realistic estimated cost of implementation. There are assumptions in the cost estimates that the BMPs can or will be effective, an assumption that has not been demonstrated in any watershed with pathogen impairments. The economic estimate fails to consider whether BMPs will be effective, does not name specific BMPs that have been proven effective for pathogen indicators, and does not estimate cost on a watershed-wide basis. Without an estimate of the area of BMP implementation, the cost estimates are not very helpful and are misleading.

We are not aware that street sweeping or public education are effective BMPs for pathogens.

It is misleading to include cost estimates for BMPs that are not effective, or to include cost estimates without any discussion of how much of the watershed the BMP will cover.

The cost estimates greatly underestimate the cost of TMDL compliance. Several cost areas are not addressed including costs for compliance with requirements of the WQMPs and permitting and mitigation costs for 404 permits and 401 certifications.

The specificity of the agricultural BMPs and their cost estimates have not been presented and are likely to differ from urban BMPs. We request that the TMDL Report provide more specificity for these BMPs.

The economic analysis cannot be reasonably conducted without understanding what BMPs will ultimately be effective enough to meet WQOs. Identifying the appropriate BMPs will be problematic, until the sources, transport and fate of pathogen indicators are fully understood.

Response:

Board staff notes that an intensive economic analysis is premature until more information regarding bacterial indicator sources and BMPs is gathered. Board staff believes that the proposed TMDL implementation approach that is consistent with the comment.

Please also see Response to Comments #8, 9, 24, 26 and #27.

Comment #62:

Participation in the SWQSTF should be recognized as the first phase of the monitoring program. This effort is already underway and addresses the source and impairment issues. This effort will facilitate the implementation of the TMDL in various ways.

A sampling plan can be developed as well; however, the plan should be based on clear objectives. We request that the Staff Report include the objectives of the monitoring plan, and that monitoring stations and frequency follow from the objectives.

We suggest that the requirement for a group monitoring plan involving all the agencies listed in Task 3 be deleted. We prefer that monitoring be done under existing programs, such as the Stormwater programs.

There is no basis for quarterly reports from the monitoring program. We request that this requirement be amended to require reporting on an annual basis.

Response:

Section 2.6 of the TMDL Report discusses the efforts of the SWQSTF and Board staff's participation in the Task Force's process. These issues and the need for coordination have been discussed many times at TMDL Workgroup meetings and SWQSTF meetings. Please see also the Response to Comment #7.

The District suggests that a sampling plan can be developed. Task 3 of the proposed BPA requires the development and implementation of a watershed-wide monitoring plan. Further, Task 3 identifies the objectives of the monitoring plan, as well as monitoring frequency and locations in the Task description. We believe that this addresses the District's comment.

Regarding the requirement for monitoring as a group, Task 3 clearly states that in lieu of the coordinated monitoring plan, one or more of the identified parties (including the District) may submit a proposed individual or group monitoring plan for Regional Board approval. If the District would prefer to coordinate its TMDL monitoring program with its stormwater monitoring program, the District may do so in accordance with the proposed BPA.

Regarding the quarterly reporting period. Board staff believes that a quarterly reporting period is more appropriate in order to track and address bacterial indicator levels in a more timely manner. As shown in the Attachment to Resolution No. R8-2005-0001, staff is proposing that an additional report be submitted every 3 years. This report should provide a more in-depth analysis of the monitoring program results, review compliance with the TMDLs, WLAs and LAs and could be used as the basis for modifying the TMDL through the triennial review process and schedule.

Comment #63:

The implementation plan for the TMDL should have provisions for reopening outside the triennial review timeframe.

Response:

Please see Response to Comment #7 and Task 6 in the proposed BPA, which has been revised to recognize explicitly the SWQSTF.

Comment #64:

The BPA include several deadlines for submittal of documents to the Regional Board. We request that the BPA also include timelines for response and/or approval of these documents by the Regional Board.

Response:

Because of the importance of these TMDL in protecting beneficial uses, Board Staff is committed to review in a timely manner any documents and/or plans submitted by the District or other parties. Likewise, TMDL development and review is high priority with the Regional Board, as reflected in the Board's 2002 Triennial Review list. Beyond that, it is simply infeasible to provide time frames for the Regional Board, since approvals are in part contingent on the quality of the submittals.

Comment #65:

Water transfers are shown on some of the hydrographs, yet are not discussed in the text. How do these discharges impact the indicators? Does this implicate the water purveyor as a source under the TMDL? If there is contaminated sediment, will it then be transported? Or could water transfers be used as a BMP? Unless these water transfers cease, we suggest that these concerns be addressed in the TMDL Report.

Response:

Water transfers, of the type shown on some of the hydrographs, occur periodically and are usually of short duration. At this time, there is insufficient information to adequately determine the effects of these flows in regards to bacterial indicators. Board staff expects that as part of the source evaluation tasks proposed in the BPA, the extent to which the water transfers affect bacterial indicator densities will be determined.

Comment #66:

The map text and relevant features in Figure 2 are too small and difficult to read.

Response:

Comment noted.

Comment #67:

There is no evidence to substantiate the statement that is made in the last sentence in the paragraph on page 28. This sentence appears to state that little stormwater runoff from natural areas gets beyond the recharge areas. Please provide more evidence for this assertion.

Response:

The sentence in question reads, "Stormwater runoff from streams and creeks of the mountainous areas of the watershed is usually diverted for water supply or recharged for groundwater storage before it reaches the valley reaches of each stream or creek that is the subject of this TMDL."

Based on discussions with the General Manager of the Chino Basin Water Conservation District, surface water, including stormwater runoff, in San Antonio Channel is diverted primarily by water rights holders for recharge into the Six Basins area, which includes the areas underlying portions of the cities of Pomona, Claremont, Upland, La Verne, and San Dimas. In addition, surface water, including stormwater runoff, in the Cucamonga Channel, as well as other creeks and streams to the east of San Antonio Canyon, is diverted by local water rights holders for municipal or other use, or is recharged into the Cucamonga Groundwater Basin or Chino Groundwater Basin. However, Board Staff notes that reportedly there was significantly less recharge or diversion during the latest winter due to high sediment loads, which were due to heavier than normal rain events following the forest fires of 2002 and 2003.

Comment #68:

Figure 21 appears to be labeled incorrectly. Hydrograph data elsewhere in the report suggest that samples taken on 10/25/96, 10/30/96 and 11/21/96 were low flow samples.

Response:

Figure 21 is labeled correctly. Hydrograph data depicted in Figures 8 and 9 clearly indicate high flow conditions for 10/30/96 and 11/21/96, and low flow conditions for 10/25/96. Samples were collected on these dates as part of a storm water monitoring program conducted by Regional Board staff. Monitoring was performed on 10/25/96 during low flow conditions for comparison purposes.

Comment #69:

In Section 5.2.3, it is not explained why agricultural samples were not collected (see Table 12). Please provide an explanation.

Response:

In the TMDL Report, Section 5.2.3, it is clearly explained that samples were not collected in the agricultural sampling locations because the channels at these locations conveyed water only during storm events. During dry weather conditions, these locations did not convey any water. Sampling personnel were able to collect 13 samples at the Bon View Avenue location because there was sufficient standing water remaining in the channel from storm events on days preceding the sampling activities.

Comment #70:

Reference 9 on page 94 has incorrectly listed Volume 65 for the article by Davies et al. 1995; the correct reference is Volume 61.

Response:

Board Staff agree. This is a typographical error. The correct reference is Volume 61.

PEER REVIEW COMMENTS FROM DR. MARYLYNN V. YATES
University of California, Riverside
(Letter dated April 22, 2005)

Comment #71:

Several references were made to the fact that the results at a certain site exceeded “the minimum number of exceedances for listing a waterbody on the 303(d) list,” however, the minimum number is not clearly identified and should be explained in the document.

Response:

Note: Dr. Yates makes a number of recommendations in this and subsequent comments for revisions to the TMDL Report. As indicated in prior Responses to Comments (see, for example, the response to Comment #1), there is no intent to revise the TMDL Report presented to the Board on February 3, 2005. Revisions to the TMDLs will be shown in the revised proposed Basin Plan amendment (Attachment to Resolution No. 2005-0001) and will be discussed in a supplemental staff report to be prepared for the second workshop concerning the TMDLs.

As discussed in Section 5.1 of the TMDL Report, results of the TMDL Monitoring Program are discussed and compared with the State Water Resources Control Board’s (SWRCB) Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List (Listing Policy). The Listing Policy was adopted by the SWRCB in September 2004¹. The Listing Policy specifies the minimum number of measured exceedances required to place a water segment on the 303(d) list of impaired waterbodies. The Listing Policy is available on the SWRCB website.

In short, the minimum number of exceedances needed to place a water segment on the 303(d) list is based on the sample size and is as follows:

For 5–30 samples, 5 or more must exceed the water quality objective
For 31–36 samples, 6 or more must exceed the water quality objective
For 37–42 samples, 7 or more must exceed the water quality objective
For 43–48 samples, 8 or more must exceed the water quality objective
...and so on up to 121 samples.

The smallest sample size for the TMDL monitoring program for each sampling location was 0 samples and the largest sample size was 45. If there are less than 5 samples collected, which was the case for a few of the TMDL sampling sites, no assessment can be made.

Comment #72:

In Table 7, it would be helpful if the reason for sampling at a given site contained more information than “impairment status.”

Response:

The sampling locations cited as “impairment status” were included to evaluate receiving water quality of the 303(d) listed water segment and to confirm the basis for the original 303(d) listing.

¹ Section 5.1 of the TMDL Report indicates that the 303(d) Listing Policy was pending approval by USEPA. Board Staff was mistaken; the Listing Policy does not need to be approved by the USEPA. Therefore, the Listing Policy is an effective state policy.

Comment #73:

Interpretation of the sampling results in Table 10 and 11 would be facilitated by indicating to which waterbodies each of the samples corresponds.

It is stated earlier in the document, but it would be helpful to place that information in the table, so that it is clear that there was an exceedance of the criteria.

Response:

The sample locations either correspond to a waterbody, represent a general land use type, or do both. If the sampling site is located on one of the listed waterbodies, it is indicated in the Sampling Site column in Tables 10 and 11 of the TMDL Report. The sampling locations at Bon View @ Merrill Avenue and at Archibald Avenue @ Cloverdale Avenue are street gutters that drain agricultural areas, as indicated in Table 7.

Comment #74:

Figures 23–27 are redundant with the information in Table 10.

Response:

Comment noted.

Comment #75

As the fecal coliform water quality objective for REC1 waterbodies is the most restrictive, it is prudent to choose that as the numerical target for the TMDL.

Response:

Comment noted.

Comment #76:

Based on the monitoring programs conducted, it is clear that agriculture and urban runoff are sources of fecal coliform bacteria to the watershed during both dry and rain seasons. However, the basis for the statement that, “Open space and wilderness areas are not significant sources of fecal coliform under the dry weather conditions investigated” is not clear. Was a statistical analysis performed to enable this determination?

Response:

The statement is provided in Section 5.5 of the TMDL Report. The basis for this statement is that during the TMDL sampling period, which represented a relatively dry hydrological period, at only 1 time was there an exceedance of the fecal coliform objective at the open space sampling sites. Further, this conclusion is supported – again only during the TMDL sampling period – by comparison of this data to the 303(d) Listing Policy. The Listing Policy uses a statistical evaluation of pollutant data (binomial test – see the California 303(d) Listing Policy) to identify impairment. Board Staff fully recognize that additional data in other open space areas in the watershed, as well as further evaluation of both dry and wet weather bacterial discharges from open space areas (as well as other land uses), is needed (see Section 5.5 of the TMDL Report).

Comment #77:

The statement that “POTW dischargers to the Santa Ana River and tributaries are not sources of fecal coliform” is not correct. As shown in Table 13, there were total coliform bacteria present in concentrations higher than permitted in discharges from POTWs. It is likely that some of these were fecal coliform bacteria.

Response:

Board Staff should have been more specific in the concluding statement regarding POTWs as a source of fecal coliform (Section 4.4 of the TMDL Report). This statement only refers to whether the exceedances recorded from the POTWs during the TMDL sampling period resulted in fecal coliform exceedances in receiving water (in this case, the Santa Ana River) during the sampling period. Based on an evaluation of the data, it does not appear that the two POTW violations noted (RIX facility and City of Corona) affected fecal coliform results on the Santa Ana River.

Board Staff agree that when POTWs exceed their total coliform discharge limits, they can be a source of bacteria in Middle Santa Ana River waterbodies. However, the POTWs have very stringent discharge limits that are well below the fecal coliform REC1 standard. Provided that compliance with the limits is achieved, which is the norm, then POTW discharges are not considered a bacterial source.

Comment #78:

In addition to doing studies on the potential for survival and re-growth of fecal coliform bacteria, it is essential to perform studies of that type using the indicators (e.g., *E. coli* and enterococci) that are currently under consideration for use by DHS. This will be useful in amending the TMDL when the new indicator criteria are established.

Response:

Comment noted. Board staff expect that the dischargers will include the specified indicators in implementing Tasks 4.1 and 5.1 of the proposed Basin Plan Amendment.

Comment #79:

The assumption that fecal coliform concentrations at or below the existing Basin Plan fecal coliform water quality objectives will ensure that the numerical target is met seems reasonable. If however, significant re-growth is occurring, and/or the organisms are surviving for extended periods of time, this assumption may not be correct.

Response:

Comment noted. See Response to Comment #3.

Comment #80:

It is assumed that there is an error in Table 14, and the entries in all columns should read, "...and not more than 10% of the samples exceed 400 organisms/100 ml for any 30-day period." Given that assumption, then the proposed TMDL/WLAs/LAs seem appropriate. If however, significant re-growth is occurring, and/or the organisms are surviving for extended periods of time, then the Basin Plan fecal coliform water quality objective for REC1 waterbodies may not be able to be met.

Response:

See Response to Comments #18, 45, 53 and 54.

Comment #81:

One of the bases for the statement that a "substantial and adequate" margin of safety is implicitly incorporated is that the TMDL and load allocations do not account for dilution and die-off. If, however, significant re-growth is occurring, and/or the organisms are surviving for extended periods of time, they could overcome the effects of die-off and lack of dilution. It would seem imperative to conduct survival and re-growth studies to determine the magnitude of these effects on the ability to achieve the numerical targets.

Response:

As part of implementing Tasks 4.1 and 5.1 of the proposed Basin Plan amendment, Board staff expect that dischargers will evaluate survival and re-growth of organisms. In addition, please see Response to Comments #3, 18, 45, 53 and 54.

Comment #82:

The requirement that there be compliance with the WLAs and LAs on a year-round basis are appropriate. However, based on the monitoring results during storm events, there need to be provisions for the WLAs and LAs during storm events.

Response:

Please see Response to Comments # 9, 31, 45 and 55.

Comment #83:

In general, the implementation plan proposed in the document seems to be appropriate.

Response:

Comment noted.

Comment #84:

The monitoring proposed in the Basin Plan Amendment only requires monitoring to determine whether the actions and programs implemented pursuant to the TMDLs are effective. However, it is not clear that this minimal level of monitoring will enable the Regional Board to revise the TMDL to more accurately reflect the sources of pathogens in the watershed. As stated on page 84 of 143, much more intensive monitoring of the agricultural, urban, and open space runoff needs to be performed to identify specific sources of pathogens in the watershed. A more specific directive to perform this monitoring needs to be included in the TMDL.

Response:

Tasks 4 and 5 of the proposed Basin Plan Amendment include requirements to develop and implement source evaluation plans for urban and agricultural areas. Board Staff expect that these source evaluation plans will include the more intensive monitoring and investigation activities suggested in the comment.

Comment #85:

In anticipation of the adoption of new indicators to conform with the USEPA's national water quality criteria recommendations, the data that have already been collected on the occurrence of enterococci and *E. coli* in the watershed need to be analyzed. As new monitoring programs are implemented, the additional data on these indicators need to be evaluated as well.

Response:

Comment noted.

Comment #86:

In general, except as noted above and below, the scientific basis for the proposed rule is sound. It would be desirable to have more data on which to base the TMDL, but it is recognized that the best use is being made of the existing data. It is strongly recommended that specific requirements for more detailed monitoring be included in the Basin Plan Amendment.

Response:

Comment noted. Board Staff believes that the specific source identification studies (Tasks 4 and 5), as well as the watershed-wide monitoring program (Task 3) of the proposed Basin Plan amendment are consistent with this recommendation. Further, as noted previously, the efforts of the Storm Water Quality Standards Task Force will certainly provide data and information that can be used to refine the TMDLs in the future.

Comment #87:

On page 45 of 143, the following statement is made, “However, densities of bacterial indicators above certain levels indicate that there may be other organisms present that are harmful to public health.” There is abundant evidence that pathogenic microorganisms can be present in waters in the absence of bacterial indicators, and that disease outbreaks have occurred in these situations. I believe that this discussion needs to be expanded to include a statement to reflect this fact.

Response:

Board Staff note that more specific information could have been provided on many subjects in many sections of the TMDL Report. While bacterial indicator correlation with disease rates is an important subject, the Board is obligated to develop TMDLs to assure compliance with established objectives. At present, these objectives are based on fecal coliform. The TMDLs also include numeric targets based on *E. coli*, recognizing that a change to include these indicators in the Basin Plan is likely to be made.

Comment #88:

On page 47 of 143, the following statement is made, “... microorganisms in densities above certain levels in water can cause adverse health effects...” This statement is very unclear. At what pathogen density will the water not cause adverse effects? To meet EPA’s health goal of less than 1 infection per 10,000 people per year, the acceptable density of rotavirus is 2.2 pfu/10 million liters.

Response:

The statement in the TMDL Report specified by Dr. Yates was included merely to point out that microorganisms can cause adverse effects, and that higher densities of microorganisms have a greater likelihood of causing adverse effects than lower densities. Currently, the Regional Board uses fecal coliform densities as specified in the Basin Plan to protect recreational beneficial uses.

See also Response to Comments #2 and 3.

Comment #89:

Most, if not all, of the figures showing fecal coliform monitoring results should use a logarithmic scale for the y-axis. This will facilitate reading the graphs.

Response:

In evaluating the data from the TMDL monitoring program, Board Staff evaluated the best methods to present the data and did consider displaying the data using a logarithmic scale. However, it became apparent that in presenting the data in that format, because of the extreme range of fecal coliform values, the ability to discern minor exceedances of the water quality objective would be lost.

Comment #90:

Throughout the document, *Escherichia coli* should be referred to as *E. coli* rather than *E. coli*.

Response:

Comment noted.

Comment #91:

Tables A4 through A12 need to have the appropriate column headings changed to “Total coliform bacteria” and “Fecal coliform bacteria.”

Response:

Comment noted.

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